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Essays and Cases.

Art. I.—Epidemic Cholera.

Miscellaneous Observations—historical, statistical, ætiological and therapeutic, on the prevailing Epidemic, by Daniel Drake, M. D.

In the short space of fifteen years, more books, pamphlets, tracts, discourses, reviews, proclamations, and advertisements, have been published on and about the Cholera, than on the subject of most other diseases, from the days of Hippocrates to the present hour. No malady ever before set so many pens in motion, or provoked so much repetition. The novelty and fatal character of the disease have given origin to the multiplicity; the uniformity of its symptoms, progress and termination, to the repetition. To which may be added the obscurity which hangs over its remote cause, and the difficulty of treating its confirmed and advanced stages, both of which have incited all classes of the profession to speculations on its ætiology and therapeutics. The Western Journal, among others, has been fraught with these matters; and the present number seems destined to go forth, with as many *verba cholerica* "lumbering at its back" as encumbered any of its predecessors.

1. *Spread of the Epidemic.*

In the last number it was announced, that the Cholera was spreading off from the Ohio in either direction. Its progress in the south has been rather indefinite. In Kentucky it seems not to have extended, with violence, beyond the central towns of Lexington, Danville, Harrodsburg and Bairdstown. It has, indeed been more decidedly severe in the northern, than the southern half of that state. The towns which have suffered most, are Maysville, Flemingsburg, Cynthiana, Georgetown, Paris, and Lexington; but most of the villages north of the Kentucky river have been afflicted with more or less severity, and the whole intervening country has had its visitation. As yet the facts necessary to a history of its geographical range in that state, and its comparative violence in different parts, have not been placed, in an authentic shape, before the profession.

I have still fewer materials for its history in Tennessee, where, however, it seems to have prevailed with less intensity than in Kentucky. But Shelbyville is an exception to this remark, as, from the newspaper accounts, its mortality in that town was very great.

Illinois and Indiana, it would appear have suffered but little. The eastern portions of the latter state, have been most afflicted. Some villages have been scourged, while the greater number have entirely escaped.

Ohio has suffered more than any of the states enumerated, except Kentucky. The shores of the river and the valleys of the Scioto, and the Little and Great Miamies have been most affected. It is certainly a remarkable fact, that the eastern half of the state has almost escaped. Lancaster, Granville, Newark, Zanesville, and the other towns east of the Scioto, have not been reached; while Chillicothe has had an average attack, and Columbus a most mortal and protracted visitation. Portsmouth, at the junction of the Scioto with the Ohio, forty miles below Chillicothe, and Circleville, half way between the latter town and Columbus, appear to have suffered little or none at all. Of the towns in the Miami country, Urbana, Springfield, Xenia and Hamilton, have either escaped, or been but slightly visited;

while Lebanon, Dayton, and particularly Troy, have experienced a considerable mortality. Many small villages, as far as I now know, have entirely escaped. The visiters at the Yellow Springs, amounting generally to 150, continued throughout the whole watering season, entirely exempt. Of all the neighborhoods or towns of the Miami country, none has been so fatally affected, as the scattering village of Sharon, and its vicinity, twelve miles north of Cincinnati; where it appeared suddenly in the month of July, and in the course of a week, swept off an almost unprecedented number of its little population. An entire family consisting of eight persons died in quick succession. Three other and larger villages, Reading, Springdale and Montgomery, lying in different directions, within three or five miles, suffered but little.

Throughout the whole Valley of the Ohio, from the table land of our own state, and Indiana, to the banks of the Tennessee, the disease seems to have nearly subsided. It might be said to have risen and fallen, with the hot weather, though it appeared in some places before the *summer* heats, and still continues in others since they have ceased. Of its rise and fall in Cincinnati I shall say something presently.

2. *Ætiological Remarks.*

It seems to me impossible, not to feel a sentiment of wonder, at the unequal power with which the epidemic visits different places in the same region of country. How can this he explained? Why should two villages, under the same topographical, climatorial, and social circumstances, within a few miles of each other, be affected in such very different degrees? As Troy and Urbana, Dayton and Springfield, Lebanon and Xenia, Columbus and Zanesville; or Flemingsburg and Mayslick, only ten miles apart in Kentucky? And why should Lexington suffer so much more than Frankfort, the capital of that state, though only twenty-five miles distant from each other? Lastly, why should Cincinnati for two years be so much more fatally invaded, than Louisville, when the topographical and commercial circumstances of the two places are so nearly alike?

None of the prevailing hypotheses can explain these irregularities. Let us take that of intense heat,—were not all these places exposed equally to it? But the heat of the preceding summer was not uncommon.

The resort to copious rains in May and June, would avail quite as little, for in other years the same rains have occurred without producing Cholera; and during the present, they fell on all these places alike. Thus Xenia and Lebanon, are only twenty-four miles asunder, but the former has nearly escaped and the latter has been severely visited.

The miasmatic hypothesis is equally at fault; for in the first place, the same sources of miasmata have existed for years in the very region we have travelled over, without producing Cholera; and secondly, different places, bearing an exact resemblance, as to sources of miasmata, have been visited in very different degrees. Thus Dayton and Hamilton, bear the same relation to the great Miami and its valley; are nearly of the same age and size, and are kept in much the same condition; but Dayton has been far more fatally afflicted than Hamilton. And Columbus, Delaware, Circleville, Chillicothe and Portsmouth, all lie on the Scioto river; but the first has lost more of its inhabitants, than all the rest taken together. Still further, Covington and Newport lie adjoining, in the valley opposite this city, and the former has been much more affected than the latter. Further, a great number of towns and villages in Kentucky, are situate in topographical circumstances almost identical with Flemingsburg, Paris and Lexington, without having been scourged like them, and some have lost scarcely a single inhabitant. Maysville and Louisville bear the same relation to the river, but their sufferings have been widely unequal. Aurora and Rising Sun, in the state of Indiana, are both on the bank of the Ohio—the former has nearly or quite escaped, the latter has had a visitation. Cynthiana and Bairdstown are much alike in topographical circumstances, but suffered very unequally. Lastly, some towns both in Ohio and Kentucky, which are so situated, that copious rains might be said to be necessary to promote putrefaction, suffered but little, while others

in which such rains would bury the decomposable matter, in and about them, suffered much. Thus, in every aspect under which the miasmatic hypothesis can be viewed, in reference to the Western Country, it appears to me untenable. But the difficulties which environ it, connect themselves equally with other countries; for what should cause malarious situations to send forth, *progressively*, from the Ganges to the Mississippi, within the last few years, the miasmata which are said to produce Cholera? This single fact must overturn the hypothesis.

The theory of contagion is equally unsustained by the facts recently developed. Cholerine has prevailed extensively in the West, affecting, in many places, more than half the population, and coming upon them simultaneously. How can this be referred to contagion? How often have we seen a single member of a family taken off, and all about him preserved from a similar attack! If contagious, how could so many of the exposed escape? What rubbing of the surface of the sick, and impregnation of the clothes and bedding, with their perspiration—what repeated examination of their alvine excretions—what concentration of friends about their death bed, without, in many cases, a single one of the whole thus exposed to their exhalations, experiencing an attack! If contagious, why have neighborhoods and villages, which had perpetual communication with places where it reigned, remained uninfected? Finally, why has the disease already nearly ceased, although its subjects are indefinitely unexhausted?

The electrical hypothesis is equally unsupported. Those who maintain it, are bound to make out their case; but this has not been done. Most of the summer has been no way remarkable for electrical phenomena in the atmosphere, nor for their absence. Indeed, nothing indicates to us that the electricity of the earth and air has been disturbed in its equilibrium beyond the degree of former irregularities.

The theory of its aqueous origin, is equally unsatisfactory. In this city, the inhabitants drink river water, in Lexington and Georgetown, well and spring water, issuing in veins from between limestone rocks, yet the cholera prevailed in both; while many

villages and country settlements, have remained comparatively exempt; although supplied with the same kind of water with others in their neighborhood, which were severely afflicted.

It has been said by some writer of Europe, that the disease has only prevailed in alluvial, diluvial and secondary formations, and is therefore in its cause, connected with these geological tracts. But what others are inhabited? I know of none. Undecomposed slate or granitic rocks, are uninhabitable. Man must necessarily reside on the secondary and alluvial. New York, Philadelphia, and Baltimore, lie in primitive or granitic regions; but their immediate sites are alluvial and diluvial beds of loam, gravel, sand and pebbles, chiefly the *debris* of primitive and transition rocks. If these deposites had not been made, those cities would not have been built, and so of all others throughout the world. Hence the cholera is confined to the formations and deposites, which are newer than the primitive, merely because man is found no where else. The cause may exist over other formations, but the effect on man cannot, because man is not there. West Point, embosomed in a granitic mountain, has, it is true, remained exempt; but many other places in secondary regions, as Zanesville, in this state, have not been visited; and West Point is an alluvial bed, of precisely the same composition, with that of New York. Finally, those who maintain the hypothesis of exhalation from secondary and tertiary formation, are bound to assign some cause for their *gradual* development from India to Louisiana, which they have not done.

The supporters of a progressive meteoration, or vitiated condition of the atmosphere, from intestine changes in its occult principles, should feel it incumbent on them, to go beyond the mere invention of a name. Till they do this, they have done nothing more, than express the fact that the disease spreads, from the agency of a cause which is connected with the atmosphere, as one of its modes of existence. It is certainly not possible to disprove the existence of this condition, but sound philosophy does not call for such disproof. I think it will be admitted, however, that if this meteoration be a state of the atmos-

phere itself, the disease ought to spread according to the direction of the winds; and that when two villages are contiguous, both should be affected at the same time or in rapid succession, instead of which, it is not uncommon, as we have witnessed, lately, for one entirely to escape, while the other is mortally scourged.

It seems scarcely necessary to say, that no reference to the sensible qualities of the air, can account for the origin of the Epidemic. It has prevailed under the most opposite conditions. What resemblance is there between the climates of Calcutta and Moscow—of London and New Orleans? Again, the first occurrence of the disease in this city was in October—the second in summer. Further, the state of the weather for the last three or four months, has been the same at the same time, over the different parts of Kentucky and Ohio, while some spots have been invaded by the Epidemic, and others have gone free. The whole season has been uncommonly productive in all the fruits, grains and culinary vegetables, which grow, spontaneously, or are cultivated, in this region, and they have ripened in great perfection. Lastly, the season has not been unprecedented in any of its characteristics.

On the whole, it appears clear to my apprehension, that all our knowledge of the cause of Epidemic Cholera is purely negative. We know what it is not, but have not yet learned what it is. In this state of ignorance, it may seem presumptuous to speculate on the question, whether the Cholera will become one of the permanent diseases of our country. Many people fear it will. I do not myself cherish this apprehension. The world has been repeatedly visited by wide-spreading and mortal pestilences, and they have generally continued for several years. The Cold Plague, or Spotted Fever, (Pneumonia Typhoides,) began in the valley of the Connecticut river, in the year 1806 or 7, and reached that of the Ohio in 1814. It continued in some part of the United States for 8 or 10 years. For the last 15 or 18 years, it has not been met with. In Russia, where the Cholera began in 1830, it seems already to have disappear-

ed; as will no doubt be the case, in the United States, in the course of another year.

3. *Exciting Causes.*

It remains, I think, to be ascertained, whether the dietetic edicts of the profession, have done much to prevent the Cholera. I am persuaded, that a reduced and inadequate diet, has sometimes invited the disease; and have not as yet met with many cases, in which it was excited by the use of the prohibited vegetables. Certain it is, that the malady has repeatedly invaded those who carried themselves according to the strict letter of the law, and abhorred all *constructive* interpretations. In framing rules of diet, for the respective communities in which they practise, physicians have copied from each other, and most persons have thought it best to err on the "safe side." That many individuals have suffered in their health, from change of diet, and the omission of all succulent and acid fruits, is, I think, quite certain; though it cannot be asserted, that they were not thus preserved from the Epidemic.

Changes of weather from dryness to moisture, and from heat to cold, have undoubtedly been exciting causes. Thus in the decline of the late epidemic, in this city, a sudden change of weather more than doubled the number of deaths in 24 hours, and produced much inquietude in the public mind; but the more discerning thought they saw nothing in it, but the influence of a new exciting cause; and the rapid abatement of the disease immediately afterwards, till it entirely ceased, proved that the epidemic influence was indeed declining at the time.

Of all known exciting causes, the greatest is fear. The following fact was communicated to me by a gentleman of veracity. An inhabitant of the state of Mississippi, was taken on board a steamer descending to New-Orleans. In a few minutes afterwards, he learned that some of the passengers had the Cholera. Becoming at once greatly terrified, he begged to be set on shore in the woods, but his request was not granted. In four hours he was seized with the disease, and died the same day.

4. *Treatment of the Epidemic in Lexington.*

The following abstract was prepared for the Analytical head, but I prefer to introduce it here.

Professor Yandell, in the 22d No. of the Transylvania Journal, has favored the profession with a history of the late Epidemic in Lexington. We shall give our readers a brief abstract of his treatment.

First stage. Rest, warmth to the skin, calomel in doses of 20, 60, and 120 grains. Generally successful. In some cases a *speedy* emetic.

Second stage. Calomel in larger doses. An ounce divided into three portions, in desperate cases. In a few cases an emetic. This course was generally successful. But in addition, epigastric stimulation, laudanum, ice and iced lemonade, were used with advantage. The vegetable astringents sometimes did good.

Third stage. In some cases calomel in large doses. Ice. Diffusible stimulants, but generally with disappointment in their effects. The cold dash did not succeed. This stage generally proved fatal.

He seldom employed blood-letting in any stage of the disease; thinks that it has done harm, but is sometimes beneficial.

In the succeeding number of the Journal just quoted, Professor Cooke has stated his method of treatment. It may be said to resolve itself into the administration of calomel. Dr. C. has observed, as he thinks, that, for several years past, there has been an increasing necessity for larger doses of calomel in the treatment of our summer and autumnal endemics. Regarding cholera as one of these, and the most violent among them, he was led to administer that medicine, in what we suppose the profession generally, will regard as *maximum* doses. Sixty grains he found too small, even in mild cases, and preferred one hundred and twenty; while violent attacks called for an ounce, to be repeated until the patient should take a thousand or fifteen hundred grains. But even these doses were found insuf-

ficient, in some instances, and table spoonful (ounce and a half) doses were repeated several times. In one case, which terminated favorably, the patient took a table spoonful every six hours. The first day four were taken, the next three, and three others were also administered to supply the place of three that were supposed to be thrown up. If but one-third of each of these was retained, the patient kept down eight, or an apothecary's pound, the largest quantity, we presume, hitherto administered in the practice of medicine. It was partly in reference to such doses as these, that we ventured in our last number, to express the opinion that some portion of the extraordinary mortality of the citizens of Lexington, (500 out of 6000) might be owing. It appears, however, from Dr. Cooke's paper, that from absence and sickness, he did not treat a great number of patients, and that his brethren did not administer calomel with equal boldness. We have seen, indeed, and set forth in our last number, that Prof. Dudley gave that medicine in 10 and 20 grain doses, and placed his chief reliance on emetics. These, however, Dr. C. seldom employed, and seems to have thought every thing except calomel, unworthy of confidence. We must not conclude this notice of Dr. Cooke's paper, without adding that the method he pursued was generally successful. We are not at liberty nor disposed to question this statement, but may ask whether those who recovered would not have got well, if but a tenth part of what they took had been administered?

In addition to these publications of Drs. Cooke and Yandell, and of Dr. Dudley, noticed in our last number, we have received from Dr. T. B. Pinkard, of Lexington, an account of his observations on the treatment of the Epidemic. The Doctor states his experience to have been extensive.

Among his means of prevention was a little good old brandy or whiskey, after fatigue, or when mild incipient symptoms existed, and he speaks highly of its benefits. "As a medicine," says he, "I prescribed it to arouse the dormant energies of the nervous system, assist digestion, invigorate the languid circula-

tion, and remove feelings of mental and corporeal exhaustion. It is a remarkable fact, that during the epidemic, many individuals of both sexes, who had never been accustomed to any alcoholic stimulus, and to whom even the taste of brandy or whiskey was disagreeable, found its effects to be those of a valuable cordial and tonic, without producing any unpleasant sensations in the brain, or flushing of the face; and it was also observed by those who thus used it as a medicine, that as the epidemic declined, its effects became disagreeable, so that it was most willingly discontinued. That it was, in fact, useful to many under proper circumstances and in regulated doses, I am well assured; but it is right that I should add, that the intelligence having gone abroad, that our physicians had recommended brandy as a preventive of Cholera, many persons considered it as a license to indulge their depraved appetites for stimulation, and by excessive drinking, not only invited the disease, but rendered it much more violent and mortal than it would otherwise have been."

We do not consider the profession liable for these abuses. It is their duty to give *correct* advice, and they should not be held responsible for such consequences as Dr. P. has revealed to us. Under this impression I shall state, that the visitors at the Yellow Spring, male and female, drank ardent spirit as a preventive, daily, beginning in the morning before breakfast, and all of them escaped the Epidemic, while it was prevailing, as we have seen, in many parts of the Miami country.

For the cure of the disease in its first or diarrhœal stage, Dr. P. gave, every four hours, 15 or 20 grains of calomel, with 5 of ginger or cinnamon, 1 or 2 of capsicum, and 5 of camphor, in a powder, with loaf sugar, washed down with brandy and water, or pepper tea; and confining his patients to a warm bed, allowed them ice, or iced water, with camphorated spirit. If the stomach was loaded, he administered an emetic of ipecac or mustard, and worked it off with tepid salt water; after which he allowed them a moderate dose of laudanum or opium, and gave the powder just mentioned. When the pulse was strong and the patient of a full habit, he bled till the morbid energy

of the circulation was reduced. When the diarrhœa was subdued, he permitted a bitter infusion, and a regulated diet.

In the second or choleric stage, attended with spasms and rice-water discharges, he often found an emetic of service; his dose of calomel was 20 or 30 grains, with one of opium every hour; he gave iced soda water; applied external irritants, and administered injections of starch and laudanum. He also wiped and rubbed the skin: But his chief reliance was on calomel, given in the above doses, which he regarded as preferable to larger ones, till the functions of the liver were restored. However, he found when the serous discharges were profuse, that opium was of great service.

In the third stage, his greatest dependence was on ice and iced water, which he allowed *ad libitum*: he also gave calomel, but found the ice far more beneficial; indeed, it was his principal remedy.

5. *Cholera in Cincinnati.*

The July number of this journal contains so much on the subject of the visitation of Cholera, under which the city was then suffering, that I shall say but little of it at this time. The Epidemic attained its maximum in the last week of the month, on the 24th of which there were thirteen interments from that disease. By the first of August it began to abate and by the beginning of the present month, September, had nearly ceased. But I shall be a little more specific, and present the following tabular view, from the returns of the sextons to the City Council, which, however, I fear are not very accurate.

Deaths in Six Months.

1833.	Whole No.	Cholera.	Scarlatina.	Dysentery
April,	50	2	11	0
May,	107	38	3	3
June,	154	78	8	2
July,	373	187	9	3
August,	177	61	11	2
September,	95	4	2	3

From this table it appears, that the total number of deaths from the late visitation of Cholera, was 370, from Scarlatina 44, and from Dysentery 13.

If we add the loss from the Epidemic to that of last year 571, we have an aggregate of 941, or about three out of every hundred of our entire population. This loss, although great in absolute degree, is much less in proportion to our population, than that of many smaller towns in the West, as for example, Columbus, in this state, and Flemingsburgh and Lexington in Kentucky. I have not seen a statement of the entire loss of Columbus, but it is admitted to have been very great. That of Flemingsburgh was 66. If its population was 1000 (too high an estimate perhaps) the loss was more than six out of every hundred. That of Lexington was 500, or about eight of every hundred, taking the population of the town at 6000. The relative loss of Flemingsburgh and Cincinnati, was as two to one, of Lexington nearly three to one, counting two visitations to us, and but one to each of those places. Much of this difference was no doubt owing to a greater popular panic (which I believe to have existed) there than here, but it cannot be said that the remote cause was not more virulent.

The whole number of deaths in Cincinnati, for six months beginning with April, in the years 1831, '32, '33 will appear from the following table:

	1831.	1832.	1833.
April,	55	77	50
May,	45	110	107
Jnne,	92	95	154
July,	102	116	373
August,	128	141	177
September,	93	97	95
Total,	515	636	956

If we deduct from the mortality of the present year the Cholera returns, we have a remainder of 586, which is little more than the mean term of the two preceding years.

Among the complications with Cholera this summer, the most

important was dysentery. The number of cases has been considerable, though the deaths for six months were only 13. In some instances the disease commenced as Cholera, and terminated in dysentery—in others the reverse; while a few exhibited many of the characteristic symptoms of both, at the same time. In proportion as the dysenteric character predominated, was the safety of the patient. The treatment which this dysentery required, was substantially the same with that of Cholera. Calomel and opium combined, were the indispensable parts of the *methodus medendi;* but mucilages—oleo-saccharums—cretaceous mixtures, and the different preparations of rhubarb, were valuable auxiliaries. In some cases, astringents were of service.

Having in our last article on Cholera, gone fully into the treatment then in vogue here, I need only add, that it continued much the same, till the disappearance of the disease.

In conclusion, I shall repeat for the hundredth time, that all who would be cured of Epidemic Cholera, should commence the treatment in its first or diarrhœal stage. Almost any method, provided rest be a part, will then succeed; while no means yet discovered, can be relied on, after vomiting and spasms have supervened; and this is all that is of any substantial practical value, in the thousand and odd volumes which have been written on this malady. Such at least is my opinion.

6. *Fatal Cases.*

The publication of fatal cases of Cholera, may, perhaps, throw some light on the causes of its mortality. The following are all that have happened in my practice, since the reappearance of the Epidemic in April last. They are stated in the order of their occurrence.

Case I. Mrs. H. aged 64. This lady had been for several years afflicted with winter bronchitis, which had at length become habitual, and was occasionally accompanied with diarrhœa. Both in mind and body she exhibited strong marks of senescence for one of her years.

On the afternoon of the 14th of May, 1833, the atmosphere

being cool, with N. E. wind, and more or less rain, she was attacked with diarrhœa serosa. It continued through the night.

Next morning, 15th, at an early hour, I was called in. The diarrhœa continued, with nausea and occasional vomiting. The alvine discharges were gruel-like: the gastric, watery and mucous: no bile in either. Her pulse was weak and slow and empty; hands shrivelled, complexion dark, lips purple, and eyes sunken. She had much thirst and considerable cramp. These symptoms continuing and increasing, she expired in the evening.

As this lady had been subject to diarrhœa, a choleric tendency was not suspected by her friends, and but little was done through the night. In the morning she was passing into a state of collapse. Opium and calomel, with gentle internal stimulants and stronger external, were tried, but had no effect in arresting her malady.

At the time of her attack there was but little cholera in the city. Her bronchitis afforded no protection from the choleric poison, although it was attended with hectic fever. The state of the gastro-enteric mucous membrane, which every now and then gave her diarrhœa, seems to have favored the production of the cholera. The change in her complexion was early, compared with the quantity of alvine evacuation, which arose, perhaps, from the disorganized state of the pulmonary membrane, a condition unfavorable to the due aeration of the blood.

How far a case of this kind is *necessarily* fatal, I cannot pretend to say; but is there not much reason to believe, that, if it had been treated with the usual remedies in the first stage of the attack, it might have terminated favorably? I am disposed to think it might.

As this lady was confined to her chamber, in a high and healthy part of the city, had seen no one with cholera, and was exposed to the action of no local miasm, her case presents a distinct and palpable fact against the doctrines of contagion, and malaria.

Case II. June 8th. The infant child of W. R. M. aged one year. This patient was supported by a dry nurse, and ex-

hibited considerable emaciation. It was subject to occasional diarrhœa and vomiting. On the morning of the 8th, it was attacked in this way, and took some small doses of calomel, by the order of another physician, in my absence. In the evening when I saw it first, although its evacuations had not been profuse, its pulse was very small and its feet and hands cold and purple. No external heat could warm them. It perpetually rolled its head, like a patient with hydrocephalus. Its pulse continued to sink; in the night it had spasms, and before morning expired. Calomel and opium were repeatedly administered, and external stimulants applied but without effect.

In this case the epidemic was invited by the previously disordered state of the bowels. There was much in its physiognomy and symptoms, not very expressible, to distinguish it from the closing stages of cholera infantum. After the diarrhœa began, several hours elapsed before any medicine was exhibited; but perhaps the case would have proved fatal under the earliest treatment.

Case III. Mrs. H. aged 45.—Of a nervous temperament. This lady was subject to high degrees of hysterical irritation, attended with great cerebral excitement. She labored habitually under great apprehensions of the epidemic. Being on a visit to the country, she became indisposed with head-ache and feverish commotions. In a state of anxiety and alarm, she returned to the city. By the aid of cathartic medicines, containing calomel, cold applications to her head, and subsequently, the sulphate of morphia with sulphuric ether, she soon got much better and went about her chamber.

On the morning of the 20th of June, being rather costive, she took a strong infusion of senna, which began to operate about ten o'clock. Between twelve and one o'clock she went down to the dining room, and ate a hearty dinner, of soup, smoked beef and other articles. Soon afterwards she vomited violently, the discharges from the bowels became more profuse, and assumed the rice-water appearance. I did not see her till five o'clock.

Her pulse having considerable activity, I determined to bleed

her. Keeping her in the bed, her feet were placed and kept for three hours, in hot salt water; a large vein in the ancle was opened, and blood almost as florid as that of the arteries, flowed in a full stream, which was not stopped until her pulse began to faulter, and syncope was threatened. Her circulation did not afterwards acquire the energy, which it possessed before the bleeding. As soon as I saw her, I gave her between 20 and 30 grains of calomel, which dose was repeatedly administered afterwards, with more or less laudanum—not, however, in such large quantities, as it is frequently given. Weak lye of wood ashes was likewise exhibited, and soda water allowed for a common drink. Pellets of ice were, however, more agreeable to the patient, and were allowed *ad libitum*. From the beginning, lumps of ice, in linen wrappers, were kept on the epigastric and umbilical regions, for more than twenty-four hours. The patient liked them much, though she constantly answered that they did not feel cold, except when they were moved to a new spot, and the sensation was then agreeable to her.

Under this treatment the vomiting nearly ceased, and her stomach at length bore strong coffee, for which she expressed a desire, and which was allowed her in small quantities. The diarrhœa continuing profuse, injections of coffee, starch and laudanum were administered, with the effect of restraining it. Twenty-six hours after the ice was applied to the abdomen, it was removed, immediately after which, the stomach became more irritable. Her pulse in the course of the attack sunk very much, and her hands, on the second day became very cold; but her feet retained their heat till near the close of life, which was not till the 25th, five days after the commencement of the disease.

In the course of this time, when the vomiting and diarrhœa had become much mitigated, a considerable tinge of bile appeared in the excretions, and hopes were entertained that she would recover. It was soon perceptible, however, that her eyes were suffused, her visage red, and her mind wandering. In short, the stage of consecutive fever, attended with determination to the brain was developed. Ice was now applied to the

scalp, and stimulants administered more sparingly; but the redness of her face gradually changed to a darker hue, the delirium increased, a considerable degreee of coma supervened, her pulse gradually sunk, and the coldness of her extremities increased, till she expired. She scarcely had any cramp throughout the whole course of the disease.

Remarks.—This patient like the two preceding had not been within the atmosphere of any one laboring under that disease. Her temperament favored the action of the atmospheric poison, and explains the production of the cerebral affection, which finally caused her death. The immediate exciting causes of her malady, were, however, the cathartic, and the miscellaneous and excessive dinner which she ate during its operation. Had she after the *first* evacuation, laid down, and taken a liberal dose of laudanum, the cholera would not in all probability have been developed. In this case the refrigerant treatment had a pretty full and fair trial. It probably prolonged her life, by deferring her death from the stage of collapse to that of consecutive fever. Had she not been subject to paroxysms of cerebral irritation attended with great and sudden influxes of blood into the brain, she probably would have escaped the affection of that organ, and having been preserved through the previous stages, by the blood-letting, ice, calomel, and saline drinks, might have recovered. This was the first case in which I employed ice externally with perseverance and to much extent. As far I was able to estimate its effects, they were salutary, in relieving the irritability of the stomach and mitigating the epigastric distress. Such was the conviction of the patient. Before it was applied, the vomiting was incessant—after its discontinuance the nausea and retching became much worse than while it was used.

Case IV. On the 25th of June, Mrs. K. aged about 21, the daughter of the last patient, fell a victim to the same disease. She resided in the country and had been ill, with what form of disease I do not know; and was infirm and feeble when she was summoned to the city, on account of her mother's sickness.

From the time of her arrival, she was weak, anxious, depressed in spirits, and more or less inclined to diarrhœa; for which she took the blue pill, with weak lye and paregoric, with considerable relief. On the morning of the day on which she died, she was dressed and sat up. Early in the afternoon, her diarrhœa became profuse and serous. A large dose of ipecacuanha produced full vomiting, but brought away no bile. Ice was applied to the stomach, and calomel administered in doses of thirty or forty grains with opium. But nothing arrested the progress of her disease. She soon became affected with cramps, but not to a very great degree; her anxiety and restlessness were great, and her voice speedily sunk to a whisper. So early and great a degree of aphonia, I do not recollect to have witnessed in any other case. It attracted her own attention, and she inquired, in a voice scarcely audible, why it was that she could not speak louder. At length the characteristic complexion and coldness of the extremities came on, and she suddenly expired, a short time before her mother. The amount of alvine excretion was not very great.

Remarks.—In this patient the disease appeared to be excited by grief and apprehension. The remedies employed were useless. Could any of the others known to the profession have been more efficacious? The emetic did no good; the blood-letting none. The ice and calomel, and the alkaline solution, which was given freely with laudanum, were equally inert. Called to another case with precisely the same symptoms, I should perhaps follow the same practice, and most likely with the same result.

Case V. Mr. K. the husband of the last patient, a robust and healthy man, began to vomit immediately after leaving the death-bed of his wife, over whom he had exerted himself for six or eight hours. He had not previously complained to me, and, at the time, I regarded the disease as being suddenly excited by mental emotion. This was no doubt, in part, the case, but I have since learned, that two days before, he purchased and ate in the market, a dozen unripe pears; and that he labor-

ed under a diarrhœa, throughout the day on which she was sick, for which he took nothing.

His pulse being full and strong, be was bled nearly to fainting. The quantity taken was between sixteen and twenty ounces. An emetic of ipecacuanha was then administered which operated freely, but discharged no bile. Immediately afterwards, calomel and laudanum were exhibited freely, and he was allowed pellets of ice.

But the vomiting and diarrhœa continued. On the succeeding day his pulse being still active, he was, after I had had a consultation, bled a second time, and astringent injections with laudanum were administered. An alkaline solution was taken freely throughout the whole course of the disease. After the second bleeding his pulse became much weaker. The ethereal tincture of phosphorus, tincture of supatorium perfoliatum and laudanum, were then administered, and seemed to arrest his vomiting, but collapse came on and he died in forty-eight hours from the time when he became the subject of medical treatment.

Remarks.—In this case, the constitution of the patient and the symptoms of the disease seeming to invite it, I employed blood-letting to a greater extent, than in most other cases I have treated. The blood was quite as florid as in other diseases, but not sizy. The second bleeding was perhaps uncalled for, or even prejudicial. It demonstrated this, however, that copious venesection cannot cure cholera in all cases. To those who find in this disease, nothing but gastro-enteric inflammation, the issue of this case may be a useful lesson. Such an inflammation could scarcely survive such depletion, at an early period of the disease.

Case VI. On the 6th of July, I was requested about seven o'clock in the evening to visit Mrs. P. aged 60. At nine in the morning, having eaten nothing unusual at breakfast, she felt some pain in her bowels. About 11, a diarrhœa came on, and when I first saw her she said she must have had at least fifty motions. The discharges resembled rice water. Her pulse was still regular, and harder I thought, than could be explained

by a reference to her age. Her stomach was quiet and she had no cramps. She had taken one dose of calomel and opium just before I saw her. I immediately directed thirty grains of the former, and ordered her bled. My assistant, Mr. Wood, took about eight ounces, when she fainted. Vomiting came on, and she threw up the calomel. Another dose of the same weight was administered and retained; and the exhibition of large doses of that medicine with laudanum and weak lye, and the application of external stimulants constituted the chief treatment afterwards; with the addition, however, of astringent injections, which, more than any thing else, seemed to restrain the alvine discharges. She vomited occasionally. Cramps came on but were not very violent. Her pulse never recovered its energy from the time she was bled; and I am disposed to think the operation did her harm. It appeared to break up the tranquility of her stomach, which remaining, might have favored the action of calomel on the liver and sudorifics on the skin, under the action of which, it seems to me, she might have recovered. I have since, in a case remarkably analogous, refrained from bleeding, and the patient recovered under the use of forty grain bolusses of calomel, and large doses of laudanum, with diaphoretics. In the latter case, however, the medicines were administered only three hours after the diarrhœa commenced, while in the former, eight had elapsed, through the whole of which the discharges were profuse, and the patient allowed to rise from bed. Had she been bled six hours sooner, the operation would probably have been beneficial, or at least harmless.

Conclusion.

With this paper the Editor hopes he has concluded all that he need say on the Epidemic Cholera, except to review the publications of others. If he has appropriated a large portion of several numbers of the Journal to this subject, it should be recollected, that one of the chief objects of such a work, is to disseminate intelligence concerning new and fatal forms of disease. Among these the Cholera has been pre-eminent, and he has presumed that no other topic had such deep intrinsic interest.

Cincinnati, Sept. 30, 1833.

Art. II.—Anomalous and Fatal Case of Disease.

Russia, Herkimer Co. N. Y. 10th August, 1833.

To the Editor of the Western Journal of the Medical and Physical Sciences:

Sir:—I send you the following case for publication, if you think it worthy, in hopes you may add some remarks calculated to solve the problem—what was the cause of death in this instance?

I am, Sir, very respectfully,

Your obedient servant,

A. W. BOWEN.

Charles Dyer, aged 15, rather plethoric in habit, and of fine, healthy constitution, while binding a sheaf of grain in the field, early in August, 1832, was suddenly thrown to the ground by the breaking of the band. He fell on his face, and was considerably stunned and bruised. He was bled soon afterwards, and in a day or two recovered so well as to go about his ordinary labor. On the first of September following, while hard at work, pitching sheaves, he felt something suddenly give way at the pit of his stomach, immediately became faint, and was scarcely able to reach the house, though near by. I saw him about dusk. He was unable to sit up a minute; had much pain and soreness in the epigastrium; pulse small, eighty in a minute, fever. I took from the arm about ten ounces of blood, and while it was flowing, the pulse was reduced to less than fifty in a minute. Indeed it was the reduction of the pulse, rather than any relief afforded, that induced me to untie the ligature. Left him a cathartic. Visited him next morning. Cathartic had not operated,—could not sit up at all, soreness at the pit of the stomach increased, pulse 75. At this time I perceived distinctly, what I felt confusedly, the day before, viz. a regular pulsation extending from the end of the sternum to an inch below the navel. Repeated cathartic (jal. and cal.) and left an epispastic, to be applied long enough to irritate the surface. I saw him the third day. His bowels had been moved freely—

his fever was gone, and the epispastic had relieved the soreness, which appeared to be in the muscles. But the pulsation at the epigastrium was now more distinct, both to the eye and touch, and its lateral extent could be more accurately determined, being nearly two inches. His pulse was almost natural. On the fourth day, after the accident, there was a considerable return of the vascular excitement, which was relieved by venesection to eight ounces, and a cathartic. At this time bleeding produced no other effect on the pulse than slightly to relieve its force. From this day forward, for many weeks, there was but little variation in his symptoms. He was annoyed with a dull pain in the epigastric region, which kept him continually moaning while awake, but while asleep left him. His rest at night was pretty good, and an appetite not altogether wanting. His tongue was red—after the first day, considerably so—resembling a piece of beef steeped in brine of saltpetre; his bowels continued torpid—requiring large quantities of physic to move them. For this purpose he used sulphate magnesia at first—then substituted rhubarb, and afterwards a pill aloes, rhubarb, cinnamon and colombo. His voice became nearly inaudible, and at the end of two months he could not be heard, unless the ear was put close to his mouth. His muscular energies were prostrated and he became perfectly helpless, his extremities, particularly his feet and legs, were constantly cold, and became very much emaciated, and so weak that he could not raise his thighs. At the end of six months, he could not raise or even hold up his head, or help himself in any other way than to use a spoon with the hand, while his arm was resting on the elbow,—a power that was reserved to him during life. Occasionally when obliged to take large quantities of cathartic medicines, his stomach would throw them off, this would not last longer than a few hours after which he would feel somewhat relieved. He generally felt best after having evacuations from the bowels. In the spring following the accident, he had soreness of the throat, attended with a cough, bloody sputu and a flushed cheek; but these symptoms lasted only a few days. When medicines disagreed with him, they occasioned a *distress* as he

termed it—not pain nor fever, but an uneasy feeling at the stomach. The blue pill invariably gave him this sensation. There was no disturbance of the brain apparent;—all the faculties of his mind were preserved to the last, in their usual activity; and he presented to a spectator, the appearance of a person of fine healthy and rather athletic constitution, suddenly deprived of his corporeal powers and inevitably wasting away under the enervating effects of his confinement. During the last three months of his existence, the only wonder was that life should be so tenacious of the worn-out body. From the first, the only traces of disease apparent, were the redness of his tongue, costiveness, distress and pulsation at the epigastrium —to which point, the patient referred all his morbid sensations.

Although the pulsation was visible and remarkably distinct, still there was no external tumor; nor was there intermission or other irregularity of the pulse; but upon examination with the fingers we should say, if such a thing were possible, it had the feel of an enlargement of the abdominal aorta, from the diaphragm quite down to its bifurcation. Aware that the ordinary pulsation of the aorta may be felt and in some instances seen, when the muscles are relaxed—still the hardness of a tumor—its well-defined limits—the soreness upon pressure are wanting in a healthy person to complete the description of the present case. Nor could we otherwise account for the failure of his voice—coldness, loss of strength, emaciation of his lower extremities, torpidness of the bowels, and finally, the general decay of the system, which commenced immediately after his confinement. Continually wasting away as he inevitably was, still life clung to his emaciated body until the 31st July, 1833, almost a year from the time he received the injury, and more than eleven months after his confinement began. His death was preceded during the last two days by vomiting and purging; the former, continuing as long as his strength permitted the effort.

He was visited by the neighboring physicians, several of whom are men of experience and eminence in the profession.

Those who ventured an opinion upon the case, considered it aneurism of the aorta—others more cautious said if it were not aneurism they could not name it; while others again declared that it could not be aneurism—although as to its real nature they professed themselves equally ignorant.

Under the hope that the last opinion was correct, various remedies were proposed in the early stages of his complaint, chiefly directed towards a change of habit—such as rocking, swinging, trying to sit up; alteratives to the stomach and bowels, such as the blue pill, iodine, &c.; blisters along the spine, colchicum, and various kinds of tonics—all or any of which, invariably added to the distress at his stomach. The lightest kinds of vegetable food agreed with him best, and he always felt better after evacuations, and without any other medicines than anodynes. After a few months these became indispensable to his comfort. At first he used pulv. Dov. afterwards tinct. opii, and, finally, what agreed much better with him, a syrup of sulphate of morphia.

Post Mortem Examination. Fifteen hours after death with the assistance of my friends, Drs. Sears, Booth and Willoughby, I made an examination of the body. On laying the abdomen open, by an incision from the sternum to the pubis, and a lateral one through hypochondria; the first thing that attracted our attention, was a considerable distention of the stomach, which in this emaciated frame, appeared very much enlarged. Removing this, we sought at once for the aorta. This, to the surprise of most of us, was found of its natural, or perhaps rather of a diminutive size, and *perfectly sound*, quite down to its bifurcation. The remaining abdominal viscera appearing equally healthy, we next turned our attention to the chest. Here we found nothing more satisfactory. In the pericardium there was perhaps half a wine glass full of a limpid fluid, and the heart and large arteries and the lungs perfectly sound, as were, also, the liver, spleen, pancreas, intestines, mesentery, kidneys and bladder; among the whole not a trace of disease of any kind was visible, nor was there the least lesion of any organ discoverable, any where within

the scope of what we intended for and believe was, a faithful examination. On opening the stomach which we had detached with its contents, we found it filled with a stercoracious fluid which had evidently been thrown in from the intestines. There were on the inner coat of the stomach, one or two small red patches of a kind of efflorescence or redness, which was so fine and in fact so indistinct, that none of us were enabled to determine whether it was a morbid appearance, or a *post mortem* effect; and, if the former, we concluded that the symptoms of cholera during the two preceding days, were more than sufficient to account for it.

Thus left in the most profound ignorance of the cause of death in this case, we have drawn up this statement in order to solicit from our professional brethren, any observations calculated to throw light upon the subject.

Editorial Remark.

We regret that the medical gentlemen, concerned in this interesting case, did not extend their examination to the brain and spinal marrow, particularly the latter. From the symptoms and the remote cause, we suspect they would have found the spine the seat of inflammation—leading, perhaps, to effusion.

Reviews and Bibliographical Notices.

Art. III. Diseases of Louisiana.

The Application of Physiological Medicine to the Diseases of Louisiana. By Edward H. Barton, M. D. Honorary Member of the Philadelphia Medical Society, &c. &c. Philadelphia, 1832. pp. 55.

A friend has put into our hands a pamphlet bearing the above title. We place it at the head of our critical department, from respect for the design of the author. In doing this, we do not wish to be understood as pledging ourselves to the doctrines of the physiological school, but to the principle of manifesting respect for every one who has the enterprise to study the adaptation of new doctrines of any kind, to the diseases of the Great Valley; where so many physicians trudge on through a professional life of 30 years, without once stepping out of the beaten track of their predecessors.

The practice of our brethren of the lower Mississippi, is well known to be characterized by great boldness and energy. The lancet and calomel, particularly the last, constitute their anchor of hope, in the endemic fevers of that region. With this practice, Dr. Barton after ten or twelve years' experience, was by no means satisfied. He often saw it fail, and sometimes do harm; and, becoming a convert to the principles and practice of Broussais, resolved on testing their applicability to the fevers of the district in which he resided. The results of his trials are set forth in the little work now under review.

Not relying on the statement of these results, Dr. B. has gone into a somewhat elaborate course of pathological reasoning, to

show, *a priori*, the adaption of the physiological practice to the diseases of which he treats. This does not appear to us the most efficient method which the case presented, and he would, we suppose, have been more successful as a propagandist, had he devoted a larger portion of his work to descriptions of the fevers of St. Francisville and its vicinity, and to the detail of practical facts and cases. Experience is the only test of medical opinion; and he who asks for the confidence of the profession in a new method, must show by diversified results, its advantages over those already in vogue.

As a specimen of our author's theoretical views, we shall extract the following paragraphs on the *modus operandi* of the remote causes of fever.

"It is acknowledged by physiologists, that the skin is the most extensive of the sensitive surfaces; and that in some animals it is, in fact, the only sense—that it is also the most important, must be equally acknowledged, from the universal care so assiduously employed by civilized nations in protecting it; from the many modes invented by the ingenuity, or discovered by the experience of man, in adding to its numerous enjoyments. Upon this important surface are developed parts of two systems of nerves, one part connecting it with the cerebro-spinal system, the other with the great system of organic life —the ganglionic or sympathetic system. Upon the former, which is merely the system of relation, by which man is connected with the external world, and though many of our enjoyments, as well as our pains are derived through it, yet noxious agents producing disease, but seldom, if ever, make their injurious influence on it. The latter system then being the great system of nutritive organic life, has an apparatus of nerves peculiar to itself, and that is appropriated to its peculiar functions—the *preservation of the individual;* of appropriating and converting into a part of ourselves, portions of the matter around us. It is made sufficiently clear by anatomical facts and demonstrations, as well as physiological and pathological deductions from them, that this apparatus pervades the whole system; it is sensitive to noxious as well as beneficial impressions, *without the immediate consciousness of the individual;* the centre of this system is the great abdominal brain; it is here that impressions made upon the periphery—its feelers —are repeated like that through the senses, upon the brain. If they are beneficial, the individual is only sensible of it in the improvement of his health, and that feeling of *well-being* inseparable from that state; if otherwise, we recognise it in the impairment of some function, whose co-existence is necessary for the continuance of health and the preservation of life. The broken harmony in the extensive chain of nutritive actions associated together in sympathetic relation, ex-

tends from system to system; where it is confined to the organic system, and the constitution is unable to resist its progress, and no means are used to assist it, the health of the individual is gradually undermined without exciting his apprehensions, feeling no pain, having no fever, the foe is not perceived; though by and bye, he feels that his energies are impaired, and the foundations of his constitution sapped. Here then is an impairment of the vital functions through the organic system alone, and as this is the system of support, as well as of increase and preservation, and as animal life depends upon it for its well-being and continuance, it likewise becomes affected secondarily. But noxious impressions are sometimes so violent and powerful, as to be extended to, and involve also the cerebro-spinal system, associated as they are together by an anastomosis with the pneumogastric, which is spread upon the gastric mucous membrane, and indirectly through the lateral ganglia. By the conversion of the physiological into the pathological state, pain is also experienced, which is not felt in their natural state; the sympathies are more and more awakened; the assaults of the foe are no longer concealed, and there is soon developed all the complicated phenomena of the diseased state.

"It is upon the gastric mucous membrane that this important system is chiefly developed, as this is the great and primary agent of nutritive, organic life; it is here is unfolded the great object and uses of that system; without it the individual could survive no longer. Instances are on record where every other organ has been wanting at birth, the stomach never. It is to the organic system what the head is to the intellectual: external impressions then are not only made upon the extremities of the organic system, but are repeated or felt immediately upon the extensive development of this system on the gastric mucus, and it is so on account of the especial uses and importance of this membrane. It partakes directly of all impressions on the system—it is influenced by the excitements of heat—it partakes of the tonicity of cold—a cold dampness debilitates both—a warm moisture relaxes both; a cathartic applied to the denuded skin purges—an emetic vomits—quinine strengthens—digitalis and strichnine make their peculiar impressions—emollient fomentations allay the irritability within, quench thirst and lessen excitement. It is generally admitted that the effect of applying medicinal agents to the skin arises from their agency upon the nerves of the part; these nerves are either in relation with the cerebro-spinal system or ganglionic. It is probable that vicissitudes of temperature act only upon the former—while these, and all agents that affect us, act upon the extremities of the latter, and thence their impression is conveyed to that organ or surface that has the most extensive, important and pervading sympathies—the gastric mucous,—unless their qualities are in special relation to the organic sensibility of some part, (and the more extensive these sympathies are, the greater the number it receives from other organs,) hence then it is implicated in all extensive irritations."

We shall make one or two additional excerpts, for the pur-

pose of disclosing the pathological and therapeutic views, o which our author is the advocate, and which he regards as i keeping with the speculations which we have just presented.

"Believing then, that the great system of organic life, is the on which receives almost all impressions of disease, and particularly tha most important part of it which is spread on the gastro-intestinal mu cus, deriving its impressions through the direct and intimate associa tions with the epidermis; believing, that for the continuance of healt there must exist a due balance and equilibrium of power and harmon of action in the various parts of the system; that the primary impres sion of disease is local in the very nature of things, (to apply a caus to the whole system at once is incompatible with the physiological lif of the individual, and too absurd for serious argument,) the part be comes irritated, a pathological state ensues, the organ most associate with it in function, in physiological importance, in periodical action a the time, or that may be in a state of sub-irritation, takes on the actio or removes and translates it, and excites the sympathies, and effect ensue in proportion to the violence of the exciting cause, and numbe of the organs influenced by it. The theory of cure, then, may be re solved into one of antagonizing powers, a THEORY OF REVULSIONS, an that as all disease must consist of irregularity of action, a minor grad of action in one part is compensated by excess in another, the indicatio of equalizing is not so much accomplished by raising the first as b reducing the last; that mode is by depletion from whence the exces exists. DEPLETION then, is the primary agent in revulsion."

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"The theory, then, is a local impression producing a pathological state, depending for its phenomena on an increase or exaggeration of local action. The constitutional irritation is the consequence o this, through association of action, and as however great constitutional excitement may be, it never can, in the nature of things, be every where equal. There must be grades of action, or of suffering; the medication must be to lessen the general amount by general bleeding and as we cannot act upon a diseased organ directly—as to a highly irritated and excited organ, all internal remedies must at first be alike irritating, to a certain extent—the mode of relief is to lessen the amount of irritation in the organ most diseased, by local capillary de pletion, or translate it to another organ in sympathizing connexion with it, and thus antagonize this organ against it, provided we can safely excite its depletory functional action by giving such means as act upon its organic sensibility. But when the sympathies are gone —the links that connect organ to organ, and in the aggregate form the *tout ensemble*, the organic life of the individual—there is no mode but the first. If the stomach is affected with a deeply radicated inflamma tion, this is not sufficient, and it may ameliorate, it may lessen the amount of its inflammation; but if the recuperative energies of the sto-

mach are gone; if it has not the power of disembarrassing itself, by calling another organ sufficiently to its relief, death is inevitable. And even when the sympathies are not gone, they are often insufficient to remove a deeply radicated inflammation of the stomach. Such happens in our highest grades of algid fever, (and doubtless in cholera,) when, so far as my dissections have gone, the stomach is usually one coat of scarlet, and always extensively inflamed. Capillary depletion, then, is sufficient to lessen the action, (where it does not remove it altogether,) until it comes within the grade of a safe remedial power; we then call in a secretory action to its relief, by revulsing on it with some greater degree of permanence, and the system is thus enabled to re-act, and restore the lost balance and harmony."

On the subject of local blood-letting, the *remedium summum* of the physiological school, he holds the following language:

"Were I to say then, that there is a *point* where local bleeding in fever is more particularly indicated than any other; that in fact it is as much the peculiar remedy, as when the respective remedies are called for the "blistering point," "bleeding point," &c. I would say that it is especially required when the abdomen is meteorized; *where there is tension of the epigastrium; a tension accompanied or not by pain;* there may be prostration of strength; there may be violent fever; there may be diarrhœa; there may be constipation; medicines rarely ever act here kindly or give relief. In corpulent subjects, it is of little comparative benefit, except from the epigastrium alone, from causes previously explained, and of the two modes, leeching with them, is much better than cupping."

Our author speaks in a sensible manner of cathartics, emetics and sudorifics. To the first, especially, he devotes several pages. He considers the *pros* and *cons*, but dwells longest on the latter, and if not an enemy to cathartics, is certainly not a friend. In our last number we delivered our own sentiments on this subject, and shall not here repeat them. We do not enter into all Dr. Barton's fears, but we feel disposed to recommend a perusal of what he has written to those physicians, who, in febrile diseases, make it a rule, daily, to *catharticise* their patients.

"It is not to be concluded from what has been said, that I am altogether unapprised of the great value of cathartic medicines. My objections are to their indiscriminate application; and I have freely stated the grounds of these objections, and trust they will be liberally examined by my brethren. As aperients to remove ingesta, colluvies from the bowels, and some cases of light irritation, as modes of acting upon the secretions, when that can be done with safety, as revulsive irritants and derivatives in a numerous class of important diseases, they form some of the most valuable weapons in the armory of the profession."

Of blisters our author entertains but a poor opinion. He thinks epigastric blistering in fever, generally injurious. We are "pretty much" of the same opinion.

His views in relation to sudorifics are not far out of the way.

"The best sudorific is to remove that state of internal irritation or inflammation to which the dryness and heat of skin are attributable, and local bleeding in the vicinity of the diseased organ, and cold applications, are the most immediate and direct."

He has devoted a number of pages to mercury, the liberal use of which he condemns. He thinks that medicine beneficial in proportion as it promotes secretion. On his brethren of the south, who sometimes give it in tea spoonful doses, he is even severe. He declares that such doses are not merely useless, but actually pernicious.

"There are two modes then for mercury to act upon the system, one upon the glands, the other upon the mucous membranes. When upon the first, it acts revulsively, the depletion, (secretion,) often relieves the suffering, the irritation or inflammation for which it was given, and benefits result from its use. When, however, no gland sympathises or relieves the organ receiving the impression, it acts as a poison upon the part.

* * * * *

But does salivation in fever always produce safety? Is it even an evidence that all danger is over? We know it is not in other diseases. Experience has fully solved this question. Numerous are the cases on record, and many more are known to practical men, of its being no indication whatever, of ptyalism appearing in the intermission or remission, and subsiding with the occurrence of the paroxysm, evincing its little power, and proving the intermittent nature of inflammation, whether we take that of the disease or the remedy; of patients dying salivated; of many often attacked with bilious, yellow, and other fevers, while salivated for the venereal, or for the express view of warding off an attack; of a free and full ptyalism having no influence whatever on yellow fever, of which I have seen many instances. In fact, it is no better than any other revulsion, whether a purge, blister, or sinapism; nor so good, for with two of these we can better control the time, place, and circumstances. It produces no greater assurance of safety, while a thousand objections will apply to its indiscriminate administration; in the various and complicated affections incident to its use; never certain in its effects, but always liable to be abused, while most others can be used, if not always certain in their influence, there is little jeopardy of their after effects."

We have read Dr. Barton's little work with pleasure and profit. As a writer he is inexperienced, but we hope to hear from him again.

Art. IV.—Human Physiology.

Human Physiology Illustrated by Numerous Engravings. By Robert Dunglison, M. D. Professor of Physiology, Pathology, &c. in the University of Virginia. Philadelphia: Carey & Lea. 1832. 2 vols. octavo, pp. 1046.

BY A CORRESPONDENT.

Of the numerous subjects which have engaged the attention of the votaries of science, there is none more universally attractive than the science of Physiology. Whether we consider the personal interest we feel in the subject, the delicacy of Nature's workmanship, the numerous proofs of art and design, insensibly, but unavoidably leading the mind to the Great First Cause, that made and sustains the Universe, we are led on with increasing interest to discover new beauties as the subject opens upon us. Nor is the interest lessened by the obscurity of the *Final Causes* of many of the most important functions of the Animal œconomy. On the contrary, the impenetrable veil which Nature has here thrown over her operations, has served to swell the number, and increase the ardor of those who are determined to push their investigations to the utmost limit of human penetration.

During the last half century, the science of Physiology has been investigated, both in this country and in Europe, with great success, its boundaries have been widely extended, and it has been disburthened of many vain speculations which served only to obstruct the progress of the student, by rendering the object of his pursuit, intricate and repulsive. While numbers of our countrymen have honorably engaged in forwarding the different branches of this important department of Medical science, it must be gratifying to the American student, that one of our associates in scientific research, with talents and learning fully competent to the task, has at length undertaken to embrace the whole subject, and place it before him with all the improvements which modern research has given it.

The first chapter of the work is devoted to the difference

between organic and inorganic bodies, and between animals and vegetables. As the first is less immediately connected with our subject, we shall pass to the second—the discrimination of which, although at first view, apparently so obvious, is, when we come to compare the lower forms of animal with the higher forms of vegetable life, attended with very considerable difficulty, we shall therefore briefly allude to them.

1. Animals and vegetables differ in their *composition*. To the carbon, oxygen and hydrogen, in combination with earthty and metallic salts, which make up the substance of vegetables, azote is added in animals. When this latter substance is found as a component part of vegetables, it is generally confined to a part, and not distributed throughout the whole. In consequence of this difference of composition, the two substances are readily distinguished. The smell of burnt sponge, coral, or other zoophytic animal is so peculiar, that it can scarcely be mistaken for any vegetable substance.

2. They differ in their *texture*. Vegetables have a greater proportion of solids, animals of fluids, vegetables have but one tissue, the cellular—animals, in addition, have the muscular and the nervous.

3. Vegetables have neither *sensation* nor *voluntary motion*, the spontaneous movements which we observe in certain plants depending entirely upon organic irritability without consciousness.

4. They differ in their mode of *nutrition*. The absorbing vessels of vegetables open upon their surface—in animals the food after digestion is absorbed from the surface of the alimentary canal.

5. They differ in their mode of reproduction. It is not necessary, however, to point out the contrast between their sexual organs, their mode of fecundation, and the circumstances attending the birth of the new individual. These differences in function are not, however, as striking characteristics as the first view they appear to be. The zoophytite is as destitute of sensibility and locomotion as the vegetable, and accordingly no traces of nervous or muscular structure have been detected in them; and

on the other hand, the spontaneous motions of the vegetable have been considered by some as the rudiments of sensibility and locomotibility.

In speaking of the *Physical Properties of the Tissues*, Dr. D. alludes to a very important property, to which much attention has been directed of late—that of *imbibition*. If a liquid be placed in contact with any animal tissue, after a time, it will be found to have penetrated its structure as it would enter the cells of a sponge. The length of time occupied in this imbibition will depend upon the nature of the fluid, and kind of tissue. The serous membranes and small vessels absorb with great promptitude—the epidermis on the contrary, resists imbibition for a considerable time. Transudation does not differ in principle from imbibition; it is technically applied, however, to the passage of fluids from within outwards.

Within a few years, some singular facts have been observed regarding the imbibition of fluids, and gases, by filling a membranous expansion, as a piece of intestine, with milk and immersing it in water, Dutrochet observed that the milk left the intestine, while the water entered it. Dutrochet hence inferred that whenever an organized cavity containing a fluid is immersed in a fluid less dense, it has a tendency to expel the denser and absorb the rarer fluid. This, Dutrochet termed, endosmose or inward impulsion, and he conceived it to be the result of vital action. Subsequent experiments have shown that a reverse action may take place. The transmission, when the internal fluid is rare, he called exosmose or outward impulsion. The discovery of this curious principle led the ardent imagination of Dutrochet to form many curious speculations. Among others, he supposed the energy of action both in exosmose and ednosmose, to be in proportion to their density and their chemical nature, and that it depended upon an electrical influence.

Dr. Mitchell, however, has shown by numerous experiments, that imbibition and transudation are dependent upon the penetrativeness of the fluids, and the penetrability of the membrane; and, consequently, are entirely independent of a difference in specific gravity, or electrical affinity. Thus, if two

fluids of different degress of penetrativeness be placed on opposite sides of an animal membrane, they will in time present the greatest accumulation on the side of the less penetrative, but will finally thoroughly and uniformly mix upon both sides; and, at length, if any pressure exist upon either side, yield to that and pass to the other side.

The same principle holds good in relation to gases. A bladder filled with hydrogen and placed in contact with atmospheric air, will permit the hydrogen to escape, and absorb common air. Dr. M. found that some gases were transmitted much more readily than others. The more fresh the membrane, the more speedy and extensive was the effect, and in living animals it took place very rapidly. The tendency to pervade the membrane, also was so powerful, that it took place in opposition to a pressure equal to twice the weight of the atmosphere.

The strong tendency of elastic fluids to mix freely and perfectly, when placed in contact, has long been known to chemists and natural philosophers, but the discovery of the disposition, both of elastic and inelastic fluids, to unite through the medium of animal membrane, has a much more important bearing upon the subject of Physiology, since, in all probability, it presides over the functions both of respiration and absorption.

The principle is a very interesting and perhaps an inexplicable one. It may possibly be owing to a galvanic influence, but it cannot be attributed to vital action, for it continues long after every trace of vitability has ceased, and indeed until the animal texture is destroyed by chemical changes.

In treating of the functions, Dr. D. adopts the classification of Magendie, dividing them into 1. *The Functions of Relation*, including the *sensations*, *voluntary motions*, and *expressions;* 2. The Functions of Nutrition; and, 3. The Functions of Generation.

In studying each of these functions, he describes the organ or apparatus, concerned in its production, so far as is necessary in a physiological point of view; and where external agents are concerned, as light in vision, sound in hearing, he gives the gen

eral principles of physic which are necessary to a full elucidation of their action.

As the principal agent in the *functions of relation*, the nervous system comes first under the consideration of the author. In considering this branch of the subject, it is impossible for the most indifferent observer not to be struck with the beautiful and varied contrivances to which nature has resorted, for the purpose of protecting the brain and spinal marrow from injury. The brain is defended from the injuries to which, in consequence of the exposed situation of the head, it is continually liable, by a bony case composed of two laminæ, which are separated by an inelastic cellulated texture, that prevents a shock upon the surface from being communicated to the brain. The principal source of danger to the spinal marrow, arises from the extent of motion which is necessary in the bony case which protects it, and from the shock produced by violent motions of the body. Against these dangers it is protected by the numerous joints of the spine, admitting of great latitude of motion, without much flexure at any one point, by the elasticity of the intervertebral substance, enabling the spine to yield to any violence, and gradually to recover its position without injury, by the great extent and firmness of its articulations preventing dislocation. There is also another protection, which was first pointed out by Majendie. The spinal cord is considerably less than the canal which contains it, and the intermediate space is filled with a serous fluid, which forms a great protection against the dangers to which it would be liable from sudden and violent flexure of the spine. To this fluid Majendie has given the name of cepalo-spinal. The elasticity of the membrane which contains it, by keeping up a constant and uniform pressure, adds greatly to the security of the important viscus it is designed to protect.

After a very lucid description of the brain and nervous system, the author proceeds to the Physiology of this important and interesting part of the animal structure. The brain is the seat of the intellect or, rather according to the opinion of many distinguished physiologists of the present day, the organ.

Its functions, however, are so far beyond the reach of human investigation, that the physiologist has little to do but to describe its structure, and classify and enumerate the phenomena which evidently depend upon its organization. Upon the Physiology of the nervous system a degree of light and interest has been thrown by the discoveries of Mr. Charles Bell, which has rarely fallen to the lot of any one individual to give to any department of science.

The medulla oblongata is divided, by Mr. Bell, into three portions, *an anterior, middle, and posterior;* and it is affirmed by Sir Charles, that the anterior gives rise to the nerves of motion, the posterior to the nerves of sensibility, while the middle portion sends forth a set of nerves which are destined to preside over the important function of respiration, and over the muscles of expression which give to the human countenance so marked a superiority over the lower animals.

According to this arrangement, all the nerves of the body may be divided into two great classes—the *original, primitive or symmetrical,* and the *irregular or superadded.* The fifth pair of cerebral and all the spinal nerves, belong to this class. They are found in every class of animals, from the zoophyte to man, running in a direction perpendicular to the longitudinal line of the body, and destined to impart sensibility and muscular power. They arise also by two roots, the anterior of which is the nerve of muscular motion, and the posterior of sensibility.

The other class of nerves—the irregular or superadded, arise from a single root, are irregular in their distribution, and destitute of that symmetry which characterises the first class. As nerves of respiration and expression, they are of course more numerous and varied in the higher orders of animals.

This discovery of Mr. Bell has thrown great light upon the obscure question respecting the cause of the complicated and irregular distribution of the nerves, and irresistibly leads to the hope that many other problems, which have hitherto taxed the ingenuity of physiologists in vain, may yet receive a satisfactory solution.

The *great sympathetic* with its branches, forms the third

great division of the nervous system. This nerve is considered by Bichat to be the great nervous centre of the involuntary functions, and is hence termed by him the *organic nervous system*, in contra-distinction to the *animal nervous system*, which presides over the functions of animal life.

In relation to this system of nerves, several very important questions present themselves for consideration. This nerve has generally been considered as the principal source of the nervous influence distributed to the viscera. Weber, however, a German anatomist of distinction, asserts that there is reason to believe, that this is not the sole visceral nerve, but that the *par vagum* may share in the same function. According to him, the great sympathetic is less developed while the *par vagum* is increased in the lower forms of animal life, until at length the latter, as is the case with some of the molluscæ, is the only visceral nerve. This view is perhaps supported by the fact, now very generally admitted, that the par vagum is the nerve principally concerned in digestion.

What is the use of the ganglia every where found in the course of the great sympathetic nerve? The author coincides with the opinion of Johnson and Bichat, that they serve to render the organs which derive their nerves from them, independent of the will. Independent of the fact, however, that the motions of these organs are involuntary, we see nothing to support this opinion, and if the opinion entertained by many physiologists, that this important branch of the nervous system is distinct and independent, connected with the cerebral system, but not originating from it, this view is destitute of a shadow of foundation. At best, therefore, the opinion can only be considered as hypothetical.

The facts respecting the sensibility of the nervous system, are possessed of a very high degree of interest. It has generally been supposed that the brain, the centre of perception, was possessed of very great sensibility. This, however, is not the fact, recent experiments having satisfactorily determined that no pain is produced by the application of any kind of irritation. The nerves possess a species of sensibility adapted to the function they are destined to perform, and are insensible to any other

kind of irritation. The posterior roots of the spinal nerves convey general sensibility to the different parts of the body, and are susceptible of very acute pain, when wounded or lacerated, but there are other nerves which are entirely devoid of general sensibility.

"This has given occasion to a distinction of nerves into those of *general* and of *special* sensibility. The nerves, that must be considered as insensible or devoid of general sensibility, are the optic, olfactory, and auditory. Each of these has, however, a *special sensibility*, and although they may exhibit no pain when irritated, they are capable of being impressed by appropriate stimuli, as by light, in the case of the optic nerve; by odours, in that of the olfactory; and by sound, in that of the auditory. Yet we shall find, that each of these nerves of special sensibility requires the influence of a nerve of general sensibility, the fifth pair. Many other nerves appear also devoid of sensibility, as the third, fourth, and fifth pairs; the portio dura of the seventh; the ninth pair of encephalic nerves; and, as has been shown, all the anterior roots of the spinal nerves."

The sensibility also varies very much in parts of the body which are supplied by the nerves of general sensibility—each part being furnished with that kind of sensation which is necessary to guard it against the injuries to which, from its office or situation, it is most exposed. Thus the ligaments of the joints may be cut or burnt without conveying pain, but how acute is the pain when they are lacerated? It is well remarked, therefore, by the author, that before we determine any part to be insensible, we must have subjected it to every kind of irritation.

It is satisfactorily proved by experiments, that perception takes place in the brain. Different physiologists have sliced away the brain and found that sensation continued until the knife reached the corpora quadrigemina, and, again, by slicing away the spinal cord from below, it is ascertained that sensibility continues until we reach the medulla oblongata. It is in this part, therefore, that we must place the cerebral organ of the senses. To this rule, however, there is one exception.

"The experiments of Rolando and Flourens, which have been repeated by Magendie, show, however, that the sight is an exception;

that it is lost by the removal of the hemispheres. If the right hemisphere be sliced away, the sight of the left eye is lost, and *vice versa;* one of the facts proving the decussation of the optic nerves. The experiments of these gentlemen show that vision, more than the other senses, requires a connexion with the organ of the intellectual faculties—the cerebral hemispheres; and this, as MAGENDIE has judiciously remarked, because vision rarely consists in a simple impression made by the light, but is connected with an intellectual process, by which we judge of the distance, size, shape, &c. of bodies."

With this solution we must confess we are not entirely satisfied. Distinct vision, it is true, rarely consists in a simple impression made by the light, but is connected with an intellectual process; but the same remark may, to a certain extent, be applied to others of the senses, especially to tact and hearing. It will not be denied, we think, that the perfect exercise of either of these senses, presupposes an intellectual process. If, therefore, a direct communication with the organ of intellect be necessary in the former case, it is equally so in the latter. The fact is that the mind associates so readily with the impressions made upon any of the senses, that a more direct communication appears to be entirely uncalled for.

Various speculations have been formed respecting the source of the nervous influence. The author after discountenancing the opinions of the older physiologists, appears inclined to favor the idea of Young and Philip, that the *nervous fluid* (by which we are to understand not a material existence, but simply the medium of communication,) is electroid or galvanoid in its nature.

"Dr. BOSTOCK, however, has remarked, that before the electric hypothesis can be considered proved, two points must be demonstrated; first, that *every* function of the nervous system may be performed by the substitution of electricity for the action of the nerves; and secondly, that *all* the nerves admit of this substitution. This is true, as concerns the belief in the *identity* of the nervous and electrical fluids; but we have, even now, evidence sufficient to show their similarity, and that we are justified in considering the nervous fluid as electroid or galvanoid in its nature, emanating from the brain by some action unknown to us, and distributed to the different parts of the system, to supply the expenditure which must be constantly going on."

In enumerating the *External Sensations*, Dr. Dunglison adopts the popular division reducing them all to "some modification" of these five, tact or touch, taste, smell, hearing, and vision. On this subject we shall extract the following interesting and important observations.

"All these have some properties in common. They are all situated at the surface of the body, so as to be capable of acting with due facility on external bodies. They all consist of two parts; the one *physical*, which modifies the action of the body, that causes the impression; the other *nervous or vital*, which receives the impression, and conveys it to the brain. In the eye and the ear, we have better exemplifications of this distinction than in the other senses. The physical portion of the eye is a true optical instrument, which modifies the light, before it impinges upon the retina. A similar modification is produced by the physical portion of the ear on the sonorous vibrations, before they reach the auditory nerve, whilst, in the other senses, the physical portion forms part of the common integument in which the nervous portion is situated, and cannot therefore be as easily distinguished.

Some of them, again, are symmetrical; that is, composed of two separate and similar halves, united by a median line, as the skin tongue, and nose. The others, the eye and the ear, are in pairs; and this, partly perhaps, to enable us to judge of the distances of external objects. We shall find, at least, that there are certain cases, in which both the organs are necessary for accurate appreciation.

Two of the senses,—vision and audition,—have, respectively, a nerve of special sensibility; and until of late years the smell has been believed to be similarly situated. In the present state of our knowledge, we cannot decide upon the precise nerve of taste, although it will be seen that a plausible opinion may be indulged on the subject. The general sense of touch is seated in the nerves of general sensibility. All, however, seem intimately connected with one of the nerves of general sensibility;—the fifth encephalic pair,—and, in the case of those senses, more particularly, which possess nerves of special sensibility, it is found, that they are under the presidency of this nerve of general sensibility; for if it be cut, the function is abolished, although the nerve of special sensibility may remain entire.

Constituting instruments by which the mind becomes acquainted with external bodies, it is manifestly of importance, that the senses should be influenced by volition. Most of them are so. The touch has the pliable upper extremity, admirably adapted for the purpose. The tongue is moveable in almost any direction. The eye can be turned towadrs objects, in almost all positions, by its own immediate muscles. The ear and the nose possess the least individual motion;

but the last four, being seated in the head, are capable of being assisted by the muscles, adapted for its movement.

Lastly. It is a common observation, that the loss of one sense occasions greater vividness in the others. This is only true as regards the senses which administer chiefly to the intellect,—those of touch, audition, and vision, for example. Those of smell and taste may be destroyed, and yet the intellectual senses may be uninfluenced in their action.

The cause of the superiority of the remaining intellectual senses, when one or more has been lost, is not owing to any superior organization in these senses, but is another example of the influence of education. The remaining senses are attentively exerted to compensate for the privation, and become surprisingly delicate.

We proceed to the consideration of the separate senses, beginning with that of *tact* or *touch*, because it is the most generally distributed, and may be regarded as that from which all the others are derived. They are all, indeed, modifications of the sense of touch. In the taste, the sapid body; in the smell, the odorous particle; in the hearing, the sonorous vibration; and in the sight, the particle of light, must impinge upon or *touch* the nervous part of the organ, before sensation can, in any of the cases, be effected."

We question very much the philosophy of this last remark. At least, we are able to discover none, or at least but a very remote analogy between the mode in which these different senses are affected. As to the eye, it is at best very problematical whether there be any material contact at all through the medium of rays proceeding from the illuminated body; and as to the ear, the impression is doubtless made, not by the vibratory motions of the air acting immediately upon the auditory nerve, but by their action upon the physical mechanism of the ear while the nerve is secondarily affected in a manner very different from the impression made by bodies presented to the sense of touch. Indeed the sense of touch, considered as a *sense* distinct from the general sensibility of the system, is a compound sense, requiring, in order to render it of any avail, the aid of the muscular sense. We were rather surprised that Dr. D., in enumerating the external sensations, should have entirely omitted this, which appears to us to be as strictly entitled to a place in the classification, as any of those which he has mentioned. It has been very clearly shown by Dr. Brown, in his "Philosophy of the Human Mind," that it is to this sense we owe our appre-

ciation of the weight, size, roughness, or polish of bodies that are presented to the touch, and, what renders it of much more indispensable service to the animal œconomy, that, by means of it, we are enabled to preserve the equilibrium of our bodies. It is necessary, therefore, not only to locomotion, but to every change of the body from the recumbent position. Dr. D., however, appears to include the latter sense in the sense of touch. It (*the sense of touch*) does not exist in every animal, and is nothing more than tact joined to muscular contraction and directed by volition. So that in the exercise of tact, we may be regarded as *passive;* in *touch* as *active.* The two senses, however, are evidently not to be confounded, since we resort to the aid of the *muscular sense* under circumstances where the touch cannot possibly assist in the information we derive from it.

Dr. D. offers some very judicious observations upon the sense of touch, to which at present, we canscarcely make a reference. Some of his remarks, however, upon the supposed superiority of this sense, are so just and philosophical, that we shall make a short extract from them. After enumerating some of the errors to which this sense is liable, he makes the following judicious observations.

"It has been asserted, again, that the touch is the great corrector of the errors into which the other senses fall. But let us inquire whether, in this respect, it possesses any decided superiority over the other senses. For this purpose, it is well to adopt the distinction made by SPURZHEIM and others, of the functions of the senses into *immediate* and *mediate.* Each sense has its immediate function, which it possesses exclusively; for which, in other words, no other can be substituted. The touch instructs us regarding temperature; the taste appreciates savours; the smell, odours; audition, sound; and vision, colors. These are the *immediate* functions of the senses, each of which can be accomplished by its own organs, but by no other. As concerns the immediate functions of the senses, therefore, the touch can afford no correction. Its predominance as regards the *mediate* functions of the senses is likewise exaggerated. The *mediate* functions are those that are auxiliary to the senses, consisting in the impressions they furnish to the mind and by aid of which it acquires its notions of bodies. The essential difference between those two sets of functions is, that the mediate can be effected by several senses at

once. Vision, olfaction, and audition participate in judging of distances, as well as the touch; the sight instructs us regarding shape, &c. It has, indeed, been affirmed by metaphysicians, that the touch is necessary to several of the senses to give them their full power; that we could form no notion of the size, shape, and distance of bodies, unless instructed by this sense. The remarks already made, have proved the inaccuracy of this opinion. The farther examination of it will be resumed under the subject of vision. The senses are, in truth, of mutual assistance. If the touch falls into error, as in the case of inaccurate appreciation of temperature, the sight, aided by appropriate instruments, dispels it. If the fingers, crossed, convey to the brain the sensation of two rounded bodies, when one only exists, the sight apprizes us of the error; and if the sight and touch united impress us with a belief in the identity of two liquids, the smell or the taste will often detect the erroneous inference.

On the whole then we must conclude that the senses mutually aid each other in the execution of certain of their functions; but that each has its province, which cannot be invaded by any of the others; and that too much preponderance has been ascribed to the touch by metaphysicians and physiologists. Administering, however, so largely to the mind, it has been properly ranked with vision and audition as an intellectual sense."

We make the following extract from the remarks of the author upon the sense of taste, on account of the ingenious hypothesis with which it concludes, and we do it the more willingly, as it conveys an important principle in hygiene, which cannot be too often impressed upon the mind of the young practitioner.

"To appreciate a savour accurately, the sapid substance must remain for some time in the mouth: when rapidly swallowed the impression is extremely feeble, and almost null. Of this fact we take advantage, when compelled to swallow any nauseous substance: whilst we retain a savory article long in the mouth, in order that we may draw from it all its sweets. How different, too, is the consent of the auxiliary organs under these two circumstances. Whilst a luscious body augments the secretion of the salivary glands, or cause the mouth "to water," as it has been called, projecting the saliva, at times, to a distance of some feet from the mouth, and disposing every part to approach and mingle with it; a nauseous substance will produce constriction of every secretory organ, and this effect will extend even to the stomach itself, so that it will often reject the offending article as soon as it reaches the cavity. We can thus understand how, *cæteris paribus*, an article, which is pleasing to the palate, may be more digestible than one which excites disgust, and *vice versa*."

There is generally supposed to be something mysterious and inexplicable upon the subject of antipathies, as to the manner that the subjects of them are made sensible of the vicinity of the offending animal, apparently without the assistance of any of the senses; certainly without any conscious impression being made upon them. Dr. D. refers it to a preternatural delicacy of smell, and the cases which he gives in illustration add great force to the opinion.

"To the same cause must be ascribed the delicacy of olfaction, generally observed in the blind. The boy MITCHELL, who was born blind and deaf, and whose case will have to be detailed at length hereafter, was able to distinguish the entrance of a stranger into the room by the smell alone. A gentleman, blind from birth, from some unaccountable impression of dread or antipathy, could never endure the presence of a cat in the apartment. One day, in company, he suddenly leaped up, got upon an elevated seat, and exclaimed that there was a cat in the room, begging them to remove it. It was in vain that the company, after a careful inspection, assured him he was under an illusion. He persisted in his assertion and state of agitation when, on opening the door of a small closet in the room, it was found that a cat had been accidentally shut up in it."

One of the most learned chapters in the work before us is upon the *sense of hearing*. Yet such is the obscurity attending the physiology of this important sense, that the chief interest of this part consists in the anatomical details, and the recapitulation of the ingenious hypotheses, which have been formed to explain the manner in which the human ear appreciates sounds.

One of the most interesting inquiries connected with the physiology of hearing is, whether the faculty of appreciating musical sounds depends upon the conformation of the ear, or it is strictly an intellectual faculty. Dr. D. adopts the latter opinion, and supports it by the following train of reasoning.

"The man who is totally devoid of musical ear, hears the sound distinctly. His sense of hearing may be as acute as that of the best musician. It is his appreciation that is defective. He hears the sound, but is incapable of communicating it to others. The organ of appreciation is in this, as in every other sense,—the brain. The physical part of the organ may modify the impression, which has

to be made upon the nerve of sense:—the latter is compelled to transmit the impression as it receives it; and it is not until the brain has acted, that perception takes place, or that any idea of the physical cause of the impression is excited in the mind. If, from faulty organization, such idea is not formed in the case of musical tones, the individual is said not to possess a musical ear. But the fault lies in his cerebral conformation. We do not observe the slightest relation between musical talent and delicacy of hearing. The best musicians have not necessarily the most delicate sense, and, for the reason already assigned, it will be manifest, why the idiot, whose hearing may be acute, is incapable of singing, as well as of speaking. Again, we do not see the least ratio in animals between the power and character of their music, and the condition of their auditory sense. We are compelled then to admit, that the faculties of music and speech are dependent upon the organization of the brain; that they require the ear as a secondary instrument; but that their degree of perfection is by no means in proportion to the delicacy of the sense of hearing."

The faculty is certainly improved very much by education.—The aptitude, however, is laid in cerebral organization, and is developed by the education of the instrument, the ear, as well as the encephalic, or intellectual organ, without which no such appreciation could be accomplished.

The physiology of none of the senses, indeed, of none of the functions, is possessed of such general interest as that of vision. The importance of the sense itself, the interest of the science of optics with which it is so intimately connected, the beautiful and perfect adaptation of the instrument by which vision is effected, together with the obvious use of all the parts in its complicated structure, render it a study of peculiar interest, not only to the physician, but to the general reader. Into this subject the author enters at great length, presenting to his reader every thing of importance that can be collected either from reading or observation whether of a scientific or practical nature.

One of the most interesting points in the mechanism of the eye, is the fact that it constitutes an achromatic lens. This important fact, which is too generally omitted in the popular works on physiology, is very fully and clearly illustrated by the author.

The rays of light proceeding from a point and falling upon

a convex lens are caused again to converge to a point, and thus a complete image will be formed of any object. It is this image of which the eye takes cognisance in vision. The rays of light, however, by the action of the lens are divided into their primitive colors, and as some are more refrangible than others, those which are the most so are brought to a focus, sooner than the rest; hence arises an indistinctness of the image, a confusion of the lights and colors, which confounds its proportions. In the construction of optical instruments, the imperfection arising from this source has been avoided by the following expedient. It has been ascertained that the dispersive and refractive powers of the same medium are not always strictly proportionate to each other; some substances which refract the light very powerfully, have little tendency to separate it into its elementary rays, and, vice versa, others disperse the rays very much, while they refract them but little. By employing, therefore, a convex lens with a great refractive and a very slight dispersive power, and counteracting it by a concave lens with a slight refractive but a very great dispersive power, the difficulty arising from the dispersion of the rays will be obviated, without preventing them from forming an image.

This arrangement is supposed to have been made in the human eye, in which there are three lenses, presenting three convex and two concave surfaces. The aqueous humor whose refractive power is not very considerable, is a concavo-convex lens—the chrystalline, a double convex—and the vitreous presents a single concave surface. The chrystalline is more refractive, and the other two humors are supposed to have a greater dispersive power. Thus the human eye is an achromatic optical instrument.

An important question here presents itself for consideration—what is the effect of couching the chrystalline lens upon the focal distance of the eye? It generally, we believe, increases the focal distance very considerably, so that after this operation, a very convex lens is necessary to distinct vision. This fact proves that the lens has a much greater refractive power than either of the other humors, for as the surfaces lie, of necessity,

in close contact, the concave surfaces of the humors must accurately correspond with the convex surfaces of the lens. If, therefore, their powers were equal, the removal of the lens would have no effect upon the focal distance of the eye.

The manner in which the eye accommodates itself to the distance of objects, has been a source of great perplexity to opticians. The following appears to us to be the true state of the case.

"Sir CHARLES BELL conceives "that the mechanism of the eye has not so great a power of adapting the eye to various distances as is generally imagined, and that much of the effect attributed to mechanical powers, is the consequence of the motion of the pupil, the effect of light and of attention. An object looked upon, if not attended to, conveys no sensation to the mind. If one eye is weaker than the other, the object of the stronger eye alone is attended to, and the other is entirely neglected: if we look through a glass with one eye, the vision with the other is not attended to." "The mind," he adds, "not the eye, harmonizes with the state of sensation, brightening the objects to which we attend. In looking on a picture or panorama, we look to the figures, and neglect the back ground; or we look to the general landscape, and do not perceive the near objects. It cannot be an adaptation of the eye, but an accommodation and association of the mind with the state of the impression.

The view, we have expressed upon the subject, is strikingly confirmed by the calculations of M. DE SIMONOFF, a learned Russian astronomer, who asserts, that from a distance of four inches to infinity, the changes in the angle of refraction do not exceed twenty-three minutes, so that the apices of luminous cones, in a properly formed eye, must always fall within the substance of the retina, and hence no variation in the shape of the eye, according to the distance of the object, can be necessary."

The views of M. De Simonoff can be easily confirmed by a very simple experiment. Let a lens with a focal distance of about one inch, he placed before a small aperture in a darkened room. If a screen be now placed at the focal distances, it will be found that images of objects, correct and well defined in their outlines, will be formed, though their distance should vary from four inches to an indefinite space. Within this range, the eye, assisted as it is by memory and the imagination, is able to recognise very distinctly, objects that are familiar to it, although the range of clear and distinct vision for objects which are not famil-

iar to us, is more contracted than most persons are aware of. Few persons can see as well at four inches as they can at twelve or eighteen; and when objects are brought nearer for accurate investigation, it is rather for the purpose of increasing the intensity of the light, than the distinctness of the image.

In treating of the eye, has not the author, in speaking of the "aberration of sphericity," fallen into an error regarding the true shape of the eye? The curve of the eye is not spherical but parabolic, and, consequently, is not, we presume, subject to the aberration of sphericity.

It is frequently asked, why, as an impression is made upon each of the eyes, we do not see objects double? For the same reason, we imagine, that we do not feel objects double when we grasp them with both hands, and for the same reason, probably, that we have a distinct idea of the unity of an object which addresses itself to all the senses at once.

There has been a similar difficulty experienced in accounting for the fact, that, although the image of an object of sight, is inverted upon the retina, we see it in its true position. The explanation probably is to be found in the fact, that in looking at an object, we do not embrace the whole at one view, but examine the different parts in succession. For this purpose, we insensibly move the eye so as to bring the different parts of the object upon the most sensible part of the retina, and we probably form our idea of its position, not from the image upon the retina, but from the motion of the eye.

The following remarks, pointing out an anomaly in Mr. Charles Bell's System of the Nerves, are worthy of being repeated.

"The different distributions of the motor nerves of the eye have been described in the anatomical sketch. It is there stated, that the superior oblique muscle receives one whole pair of nerves:—the fourth pair. This nerve, then, it seemed to Sir CHARLES BELL, must be concerned in the functions we have described; and as the various involuntary motions of the eyeball are intimately concerned in expression, as in bodily pain, and in mental agony,—in which the action of the direct muscles seems, for a time, to be suspended,—he was led to consider the fourth pair as a nerve of expression—a respiratory nerve;

and, hence, intimately connected with the facial nerve of the seventh pair, which, as has already been remarked, is the great agent in the twinkling of the eyelids. Anatomical examination confirmed this view;—the roots of the nerve being found to arise from the same column as the other respiratory nerves. The coincidence of this twinkling and of the motion of the eyeball upwards was, therefore, easily understood.

There is a difficulty, however, here which has doubtless already suggested itself. The fourth pair of nerves is distributed to the superior oblique only; the lesser oblique receives none of its ramifications. They cannot, therefore, be identically situated in this respect. Yet they are both considered by Sir CHARLES BELL as involuntary muscles. The action, indeed, of the lesser oblique would appear to be even more important than that of the greater oblique, as the function of the latter, when acting singly, is to carry the eye upwards and inwards; and, when the action of its antagonist is abolished, this is more clearly manifested. Sir CHARLES BELL found, that the effect of dividing the superior oblique was to cause the eye to roll more forcibly upwards: in other words, it was given up, uncontrolled, to the action of the antagonist muscle.

This difficulty, although it is not openly stated by Sir CHARLES, must have impressed him; as, after having referred to the effect of the division of the superior oblique, he is constrained to suggest an influence to the fourth pair, which would, we think, be anomalous:—that it may, on certain occasions, cause a relaxation of the muscle to which it goes, and, in such case, the eyeball must be rolled upwards!

We have still, therefore, much to learn regarding this subject, into which so much interest, and, at the same time, so much uncertainty has been infused."

The whole chapter on vision is a very interesting one, evincing on the part of the author a great deal of research and learning, and a familiar acquaintance with all that has been written upon the physiology of vision, or the science of optics.

A very considerable chapter is devoted to the consideration of the mental faculties, to which the author has given a prominence of position, that few writers on physiology have considered them entitled to in a work of this kind. In this part of the work he has given a pretty full exposition of the opinions of Gall and Spurzheim, with his objections at length to their system. Being but slightly acquainted with the opinions of these gentlemen, we are not able to pronounce upon the merit of the remarks by which they are attempted to be controverted. But, although

not very much predisposed to favor their views, we do not think that the author's objections to them are satisfactory, or that they will be considered by the friends of phrenology, as giving a statement so fair as was the duty of the author of a work like the present.

The chapter on muscular motion embraces a great variety of subjects, and exhibits in a very favorable point of view the extent and accuracy of the author's researches into every department of study, necessary to illustrate the science of which he is treating.

Great pains have been devoted of late years to ascertain the precise part of the brain which forms the seat of volition. Although these researches have been for the most part fruitless, or at least have led to very indefinite results, yet they have, nevertheless, like the search for the "Philosopher's Stone," served to develope many curious and interesting facts, that will probably become hereafter the groundwork of important physiological principles. Among these, one of the most interesting is the discovery which Magendie supposes himself to have made, and of which an account is given in the following extract:

The experiments of MAGENDIE, on this subject, are pregnant with important novelty. We have already referred to those which concern the cerebral hemispheres and cerebellum, as the encephalic organs of the general movements, in the mode suggested by ROLANDO and FLOURENS, and others. In addition, he affirms, 'that there exist, in the brain, four spontaneous impulses or forces, which are situated at the extremity of two lines, cutting each other at right angles; the one impelling forwards; the second backwards; the third from right to left, causing the body to rotate; and the fourth from left to right, occasioning a similar movement of rotation.' The first of these impulses he fixes in the cerebellum and medulla oblongata; the second in the corpora striata; and the third and fourth in each of the peduncles of the cerebellum.

"1. *Forward Impulse.*—It has often been observed by those who have made experiments on the cerebellum, that injuries of that organ cause the animals to recoil, and manifestly against their will. MAGENDIE asserts, that he has frequently seen animals wounded in the cerebellum, make an attempt to advance, but be immediately compelled to run back; and he says, that he kept a duck for eight days, the greater part of whose cerebellum he had removed, which did not move forwards during the whole of that time, except

when placed upon water. Pigeons into whose cerebella he thrust pins, constantly walked, and flew backwards, for more than a month afterwards. Hence, he concludes, that there exists either in the cerebellum or medulla oblongata, a force of impulsion, which tends to cause animals to go forwards.

"2. *Backward Impulse.*—When the corpora striata are removed, MAGENDIE found that the animal darted forward with great rapidity; and, if stopped, still maintained the attitude of running. This was particularly remarked in young rabbits; the animal appearing to be impelled forward by an inward and irresistible power; and passing over obstacles without noticing them. These effects were not found to take place, unless the white radiated part of the corpora striata was cut: if the grey matter was alone divided, no modification was produced in the movements. If only one of the corpora was removed, it remained master of its movements, and directed them in different ways; stopping when it chose; but, immediately after the abstraction of the other, all regulating power over the motions appeared to cease, and it was irresistibly impelled forwards.

"3. *Lateral Impulse.*—Again, if the peduncles of the cerebellum —the crura cerebelli—be divided in a living animal, it immediately begins to turn round, as if impelled by a considerable force. The rotation or circumgyration is made in the direction of the divided peduncle; and, at times, with such rapidity that the animal makes as many as sixty revolutions in a minute. The same kind of effect is produced by any vertical section of the cerebellum, which implicates, from before to behind, the whole substance of the medullary arch, formed by that organ above the fourth ventricle, but the movement is more rapid, the nearer the section is to the origin of the peduncles; in other words, to their point of junction with the pons varolii.

MAGENDIE affirms, that he has seen this movement continue for eight days, without stopping, and, apparently, without suffering. When any impediment was placed in the way, the motion was arrested; and, under such circumstances, the animal frequently remained with its paws in the air and ate in this attitude. What he conceives to have been one of his most singular experiments was, the effect of the division of the cerebellum into two lateral and equal halves; when the animal appeared to be alternately impelled to the right and left, without retaining any fixed position. If he made a turn or two on one side, he soon changed his motion and made as many on the other.

M. SERRES, who is well known as a writer on the comparative anatomy of the brain, and must have unusual opportunities for observation at the Hospital *La Pitié*, to which he is attached—gives the case of an apoplectic, who presented, amongst other symptoms the singular phenomenon of turning round, like the animals in the experiments just described; and on dissection, aa apoplectic effusion was found in this part of the encephalon.

"On dividing the pons varolii vertically, from before to behind,

MAGENDIE found that the same rotary movement was produced; when the section was to the left of the median line, the rotation was to the left, and *vice versa;* but he could never succeed in making the section accurately on the median line."

Other experimenters again have attempted to prove that the anterior portion of the corpora striata presides over the movements of the lower limbs, and the optic thalamus over those of the upper. Upon this subject the author makes the following remarks.

"It is sufficiently obvious, from the whole of the preceding detail, that the mind must still remain in doubt, regarding the precise part of the encephalon engaged in the functions of muscular motion. The experiments of MAGENDIE are, perhaps, more than any of the others, entitled to consideration. They appear to have been instituted without any particular bias; to subserve no particular theory; and they are supported by pathological facts furnished by others. M. MAGENDIE is, withal, an accurate and practised experimenter, and one to whom physiology has been largely indebted. His vivisections have been more numerous, perhaps, than those of any other individual. His investigations, however, on this subject clearly show, that owing to the different structures of animals, we cannot draw as extensive analogical deductions from comparative anatomy and physiology as might be anticipated. The greatest source of discrepancy, indeed, between his experiments and those of MM. ROLANDO and FLOURENS, appears to have arisen in the employment of different animals. Where the same animals were the subject of the vivisections, the results were in accordance. The experiments demand careful repetition, accompanied by watchful and assiduous observation of pathological phenomena; and, until this is effected, we can, perhaps, scarcely feel justified in deducing from all these experiments and investigations, more than the general propositions, regarding the influence of the cerebro-spinal axis on muscular motion, which we have already enunciated."

One of the most interesting parts of physiology is, the application of mechanical laws to muscular motion. The power and tenacity of the muscles, when we take into consideration their structure, and weakness after death, is astonishing. Every where, in the formation of the limbs, we observe that power is sacrificed to elegance and convenience of form, and to rapidity of motion. The muscles most favorably situated for mechanical power cannot exert more than one fiftieth part of their

power in the erection of a weight. The following are some of the modes by which the power of the muscles is diminished.

1. The insertion of the muscle into the bone at a point much nearer the fulcrum, or the centre of motion, than that upon which the power acts. From this circumstance the deltoid muscle, which is more favorably situated than most of the other muscles, makes but one third of its strength effective in elevating the weight.

2. The obliquity of the angle of insertion. The loss of power by this in many of the muscles is very great.

3. The oblique position of the fibres of the pennated muscles.

4. Muscles which coincide in action are frequently inserted into the bone in such a manner, as, in a very considerable degree, to counteract each other's influence.—As for instance the latissimus dorsi and pectoralis major in bringing the arm to the side.

5. It was supposed by the earlier writers, and has since been generally copied by succeeding authors that there is a loss of half the power, when the muscle is inserted between the fulcrum and the power. This, however is evidently an error, the loss being always proportionate to the comparative distance from the fulcrum, of the power and the weight.

Lastly much force is spent when the muscles pass over many joints—the antagonist muscles exert, in many cases, a considerable counteracting force, and probably when very great contraction takes place the action of the muscle is impeded by the fascia which invests it. It has been generally supposed by anatomists that the tendency of the fascia is to strengthen the muscle. It is difficult to conceive, however, how an effect of this kind can be produced. A more rational use would appear to us to be, the protection of the muscle, its tendon, or the joint, against the effect of sudden or violent exertion of muscular strength, which sometimes takes place; as, for instance, when the muscles are spasmodically contracted to prevent the body from falling. In support of this opinion we may remark that in those muscles which are not provided with this fascia, rup-

ture of the tendon frequently takes place, and they are, in addition, peculiarly liable to cramps after over-action, as is the case with the flexors of the leg; while on the other hand in the muscles of the thigh which are subjected to equally violent and long continued action, these results are scarcely ever produced.

These disadvantages, however, are more than compensated by the benefits which result from this arrangement.

"On the other hand, there are certain arrangements, which augment the power developed by muscles; as the thick articular extremities of the bones; the patella and sesamoid bones in general; all of which enlarge the angle, at which the tendon is inserted into the bone or lever. The projecting processes for muscular attachments, as the trochanters, the protuberance of the os calcis, the spinous processes of the vertebræ, &c. augment the arm of the lever and are, thus, inservient to a like valuable purpose. The smoothness of the articular surfaces of bones, tipped as they are, with cartilage; and the synovia, which lubricates the joints, by diminishing the friction, also augment the power, as well as the bursæ mucosæ, which are interposed, wherever there is much pressure or friction. The trochleæ or pulleys act only in directing the force, without augmenting its amount; and the same may be said of the bony canals and tendinous sheaths, by which the tendons of the muscles, especially those passing to the fingers and toes are kept in their proper course.

"Still, it must be admitted, that, as regards the effort to be exerted by the muscles, it must, in almost all cases, be much greater than the resistance it has to overcome. The very fact of the lever of the third kind being that which prevails in our movements exhibits this. The mere mechanician has conceived this to be an unwise construction; and that there is a needless expense of force for the attainment of a determinate end. In all cases we find, that the expense of power has been but little regarded in the construction of the frame; nor is it necessary that it should have been. It must be recollected, that the contraction of the muscle is under the influence of volition, and that within certain limits, the force to be employed, is regulated by the influx sent by it into the muscles. The great object in the formation of the body, appears to have been;—to unite symmetry and convenience, with the attainment of great velocity and extent of motion, so that, whilst the power is moving through but a small space, the weight or resistance shall move rapidly through one more extensive. We have seen that, in these respects, the lever of the third kind is most fitting. With any other, indeed, less power might be required; but we should have less extent of motion and less velocity, whilst the symmetry and convenience of the body would be destroyed."

Besides the advantages enumerated by the author, there are other compensations which obviate very considerably the loss of power produced by the unfavorable insertion and position of the muscles.

The muscle in elevating a weight placed at the extremity of the limb, does not raise the weight directly upward, but causes it to describe an arc of a circle, by which upon a principle in mechanics—that of the inclined plane—it gains in power in the ratio that exists between the circumference of the circle and the diameter—rather more than three to one. Upon the same principle the degree of force necessary to keep the body in the erect position is much less than would be necessary, if the body were to be borne directly upwards. The body does not require one tenth of the muscular power to preserve it in the erect position, that is necessary to raise it to that position, because its actual descent while in that position, is very small in proportion to the arc of the circle, which the bone describes. It is upon this principle that the gastrocnemii muscles, notwithstanding their oblique insertion into the tibia, are enabled to sustain the weights which are sometimes placed upon the body.

A great deal of labor has been spent in attempting to calculate the precise degree of power possessed by the muscles. The fruitlessness of such attempts may well be inferred from the discrepancy which prevails among the experimenters who have attempted the calculation. Upon this subject Dr. D. makes the following judicious observations.

"In executing the complex movements of any part of the frame, a combination of the action of the different muscles, attached to the part, generally occurs, rendering the process one of a complicated character. This, if no other cause existed, would render it extremely difficult to calculate the precise degree of force, which particular muscles, alone or in combination, are capable of exerting. The mathematical physiologists made multifarious attempts in this direction; but their conclusions were most discrepant. When we bear in mind, that the force, capable of being exerted by any muscle, is dependant upon the proper organization of the muscle, and likewise upon the degree of energy of the brain, it will be apparent, that all

attempts of this kind must be futile. We can determine, with nicety, the effect of which the parts are capable, supposing them inanimate structures. We can calculate the disadvantages, caused by the insertion of the power near the fulcrum; by the obliquity of the line of action of the power, &c.; but we have not the slightest data for estimating the effect, produced by the nervous influx,—by that mysterious process, which generates a new force, and infuses it into the muscles, in a manner so unlike that in which the ordinary mechanical powers are exerted. The data, necessary for such a calculation, would be the precise influx from the brain,—the irritability of the muscle,—the mechanical influences, dependant on the straight or oblique direction of the fibres composing the muscle, as regards the tendon,—the perpendicular or oblique direction in which the tendon is attached to the bone,—the particular variety of lever,—the length of the arm of the power and that of the resistance,—the loss sustained from friction, and the diminution of such loss caused by the cartilages, that tip the bones, and by the synovia, &c.—data, which it is impossible to acquire; and hence the solution of the problem is impracticable.

One great source of the combination of muscular motion is, the necessity for rendering one of the attachments fixed, in order that the full force may be developed on the other. In but few of the muscles is the part. whence the muscle originates, steady. To these few the muscles of the eye belong, which arise from the inner part of the orbit and pass forward to be inserted into the organ. To show how very distant muscles may be concerned in this fixation of one end of a muscle, when it is excited to the development of plenary power, we will take the case of the deltoid. This muscle arises from the scapula and clavicle, and is inserted into the os humeri: but the scapula and clavicle, themselves, are not entirely fixed; and accordingly, if the deltoid were to contract alone, it would draw down the scapula and clavicle, as well as elevate the humerus. If, therefore, it be important to produce the latter effect only, the scapula and clavicle must be fixed by appropriate muscles; as by the rhomboidei, trapezius, &c. These muscles, however, arise from various vertebræ of the neck, which are themselves movable. It becomes necessary, therefore, that the neck should be fixed by its extensors, which arise from the lumbar and dorsal regions. By the united action of all these muscles, the deltoid is able to exert its full effect, in elevating the humerus. But the deltoid, like other muscles, is capable of acting inversely; as in the case of a person lying on the ground, and attempting to raise himself, by laying hold of any object above him. The hand and forearm are thus rendered firm, and the deltoid now contracts from origin to insertion, and, consequently, elevates the scapula and clavicle.

Again, if a person, in the recumbent posture, endeavor to bend the head forwards, the recti muscles of the abdomen are firmly contracted, for the purpose of fixing the sternum, whence the sterno-cleido-mastoidei muscles in part arise, which can then exert their full power in bending the neck forwards.

These instances will be sufficient to exemplify the mode, in which the muscular motions are combined. The same principle prevails over the whole body; and where a great number of parts has to be moved, the case must, necessarily, be still more complex."

In treating of the voice Dr. D. has entered not only into the physiology of his subject, and examined very fully and ingeniously the different opinions of physiologists upon this obscure and intricate function, but he has also entered at some length upon the philosophy of language, and, perhaps, invaded provinces to which he has no legitimate claim.

In accounting for the voice, the author is disposed to look upon the opinion of Savart, as having the strongest claims to our notice. For a full account of this theory we refer our readers to the author. For the benefit of those who may not have this in their power, the following quotation will give a general idea of his views.

"These different physical conditions SAVART invokes to account for the different tones of the human voice,—under the theory, that the vocal organ, composed of the larynx, pharynx, and mouth, forms a conical tube, in which the air is set in vibration by a movement similar to that which prevails in organ pipes.

The trachea is terminated by a cleft,—the glottis,—which is the inferior aperture of the vocal instrument. This cleft, which is capable of being rendered more or less narrow, plays the same part as the *lumiere des tuyaux a bouche*, or the narrow space in the organ pipe, at the edge of the *biseau* or *languette**, along which the air passes. The air clears it, traverses the ventricles of the larynx, or the cavity of the instrument, and strikes the superior ligaments. These surround the upper aperture of the instrument, and fulfil the same function as the *biseau* of the organ pipe. The air, contained in the larynx, now vibrates, and sound is produced. This sound acquires intensity, because the waves that constitute it are extended into the vocal tube, situated above the larynx, and excite in the column of air filling it, a movement similar to that occasioned in the tube of a flute; except that the tone can be much varied, because the larynx being a short tube, can give rise to various tones by simple modification in the velocity of the air sent through it; and, moreover, the vocal tube has the same power, its parietes being membranous, of a vibratory nature, and capable of different degrees of tension. The inferior or outer part of the vocal tube is equally constituted of elastic parietes,

* The *biseau* or *languette* is the diaphragm, placed between the body of an organ pipe and its foot.

susceptible of varied tension; and the mouth, by modifying the dimensions of the column of air within the vocal tube, exerts an influence on the number of vibrations, which the column is capable of experiencing; whilst the lips can convert the channel at pleasure into an open or closed conical tube. Certain sounds, SAVART affirms, are produced altogether in the ventricles of the larynx,—those of pain and the *falsetto* voice, for example. They can be elicited, even when the vocal tube has been removed; and there are animals, in which the vocal organ is reduced to the ventricles of the larynx—frogs for instance. SAVART, consequently, considers, that the human vocal organ has, in its essential parts, a striking analogy to the action of the bird-call; and, in this way, he explains the use of the superior ligaments, which are entirely overlooked in the different theories of the voice previously propounded.

We have given Savart's view at some length, in consequence of its ingenuity, and of its seeming to explain better than any other theory the varied tones of which the human voice is susceptible. It cannot, however, be esteemed established, inasmuch as it is diametrically opposed in many points, to the observations and vivisections of other distinguished physiologists; who, it has been seen, affirm, that voice is produced solely by the inferior ligaments; that all parts above these may be destroyed, and yet voice may continue; and that, a wound in the ventricles, which permits the exit of air through the parietes of the larynx, does not destroy the function. Our notions on this point must not, therefore, be considered definite. Farther experiments are necessary; and, in all the deductions from them, great importance will have to be attached to the vital action of the parts; especially of the intrinsic muscles, which are capable of modifying the situation of parts, and the character of the function in myriads of inappreciable ways.

The following calculations respecting the tone of the voice are sufficiently curious to warrant their insertion.

"*Tone of the voice.*—Nothing can exceed the human organ of voice in variety and execution. Dr. BARCLAY has endeavored to calculate the different changes of which it is susceptible, proceeding on the principle that where a number of movable parts constitute an organ, destined to some particular function; and where this function is varied and modified by every change in the relative situation of the movable parts, the number of changes, producible in the organ, must at least equal the number of muscles employed, together with all the combinations of which they are capable. The muscles, proper to the five cartilages of the larynx, are, at least, seven pairs; and fourteen muscles, that can act separately or in pairs, in combination with the whole or with any two or more of the rest, are capable of producing upwards of sixteen thousand different movements,—not reckoning as changes the various degrees of force

and velocity, with which they are occasionally brought into action. These muscles, too, are only the proper muscles of the larynx, or the muscles, restricted in their attachments to its five cartilages. They are but a few of the muscles of voice. In speaking, we use a great many more. Fifteen pairs of different muscles, attached to the cartilages, or to the os hyoides, and acting as agents, antagonists, or directors, are constantly employed in keeping the cartilages steady, in regulating their situation, and moving them as occasion requires,—upwards and downwards, backwards and forwards, and in every intermediate direction, according to the course of the muscular fibres or in the diagonal between different fibres. These muscles independently of the former, are susceptible of upwards of 1073,841,800 different combinations; and, when they co-operate with the seven pairs of the larynx, of 17592186,044,415; exclusive of the changes, which must arise from the different degress of force, velocity, &c. with which they may be brought into action.

But these muscles are not the whole, that co-operate with the larynx, in the production of the voice. The diaphragm, the abdominal muscles, the intercostals, and all that directly or indirectly act on the air or on the parts to which the muscles of the glottis or os hyoides are attached,—in short, all the muscles, that receive nerves from the respiratory system of Sir CHARLES BELL,—contribute their share. The numerical estimate would consequently require to be largely augmented. Such calculations are, of course, only approximate, but they show the inconceivable variety of movement of which the vocal apparatus is directly or indirectly susceptible.

As the author's remarks upon *artificial language* appear to us to contain some important errors, which pervade almost every work upon the subject in the language, we shall venture with great deference to universally received opinions, to attempt to controvert them. For this purpose, we make a number of detached quotations upon which we wish to offer a few comments.

"In the preceding enumeration of the simple sounds, constituting the alphabet, C, Q, W, X and Y, have been excluded, for the following reasons. C has always the sound of either S or K, as in *cistern* or *consonant*. Q has the sound of *koo*, as in quart, (*kooart;*) W of *oo*, as in word, (*oourd;*) X of *ks*, or Z, as in vex, (*vecks,*) or Xerxes, (*zerkses;*) whilst Y has the sound of I or E, as in wry or yard, (*wri* or *eard.*) *Ch*, *Sh*, and *Th*, have been added, as being true alphabetic or simple sounds.

"Letters have been usually divided into two classes,—*vowels* and *consonants*.

"The *vowels* or *vocal sounds* are so called, because they appear to be simple modifications of the voice, formed in the larynx, uninterrupted by the tongue and lips, and passing entirely through the mouth.

Such at least is the case with those that are reckoned *pure vowels*. These, in the English alphabet, are five in number,—A. E, I, O, and U. W and Y are, likewise, vowel sounds in all situations.

"In enunciating A, as in *fate*, the tongue is drawn backwards and slightly upwards, so as to contract the passage immediately above the larynx. In sounding E, the tongue and lips are in their most natural position, without exertion. I is formed by bringing the tongue nearly into contact with the bony palate. O, by the contraction of the mouth being greatest immediately under the uvula, the lips being also somewhat contracted; and, in the production of U, the contraction is prolonged beneath the whole of the soft palate.

"The consonants are usually divided into *mutes*, *semi-vowels*, and *liquids*.

"The *mutes* are such as emit no sound without a vowel; as *b*, *p*, *t*, *d*, *k*, and *c* and *g* hard.

"The *semi-vowels* are such as emit a sound, without the concurrence of a vowel, as *f*, *v*, *s*, *z*, *x*, *g* soft or *j*.

"The *liquids* are such as flow into, or unite easily with, the mutes, as *l*, *m*, *n*, *r*. These letters issue without much obstacle; and hence perhaps their name.

"In tracing the mode in which the different consonants are articulated, we find, that certain of them are produced by an analogous action of the vocal tube; so that the physiology of one will suffice for the other also. For instance, the following nearly correspond;—

p	*f*	*t*	*s*	*k*	*ch*
&	&	&	&	&	&
b	*v*	*d*	*z*	*g*	*j*.

B and P are produced when the lips, previously closed, are suddenly opened. B differs from P in the absence, in the latter, of an accompanying vocal sound. F and V are formed by pressing the upper incisor teeth upon the lower lip. They are, consequently, not well enunciated by the aged, who have lost their teeth. F differs from V only in the absence of an accompanying vocal sound. T and D are formed by pressing the tip of the tongue against the gums behind the upper incisor teeth: D is accompanied by a vocal sound; T not. S and Z are produced by bringing the point of the tongue nearly in contact with the upper teeth, and forcing the air against the edges of the teeth with violence. S differs from Z in the absence of the vocal sound. K and G are formed by pressing the middle of the tongue against the roof of the mouth, near the throat; and separating the parts a little more rapidly to form the first, and more gently to form the last of those letters. In K, the accompanying vocal sound is absent. Ch and J are formed by pressing *t* to *sh;* and *d* to *zh*. In Ch, there is no accompanying vocal sound."

Having been induced, from personal considerations, to pay a good deal of attention to the physiology of the voice, and particularly to the enunciation of the letters, we have been led to

form some opinions very much at variance with those generally taught in the schools.

The distinction generally made between the vowels and the consonants, appears to us peculiarly defective. To form a correct opinion upon this subject, we are to recollect that the organs of speech are composed of, *the proper organ of sound*, and *the organs of articulation*. The former by the universal consent of physiologists, is placed the larynx—the latter are, the lips, teeth, tongue, palate, and the palatine arches. The vowels are laryngeal sounds, modified by the action of the breath upon the organs of articulation—the consonants are formed by the action of the air upon the organs of articulation alone. With what propriety Dr. D. can say that "the vowels are so called, because they appear to be simple modifications of the voice formed in the larynx, and uninterrupted by the tongue and lips," we cannot conceive; since he immediately describes the action of the organs of articulation in modifying the purest vowels, a, e, i, o, and u. The organs of articulation are necessary to the pronunciation of both. The difference between them is this; in pronouncing the vowel the air acts simultaneously upon the organ of sound and the organs of articulation—while in pronouncing the consonant it acts upon the organs of articulation alone and the vocal sound is not produced until the consonant is completed.

There is this further difference that the vowels may be prolonged for an indefinite length of time, the consonants are incapable of prolongation. The general opinion is that the consonants cannot be sounded without the aid of a vowel—that the semivowels have an imperfect sound, which admits of prolongation—while the mutes cannot be sounded at all. After close and repeated observations upon this subject, we are inclined to the opinion that both mutes and semivowels admit of a distinct and audible sound, without the concurrence of the vocal organ, and that examples of this may be witnessed every day in the first attempts of the infant to speak. If this opinion be true, the semivowels are no more capable than the mutes of a prolonged sound, both being produced by the sudden explosion of

breath upon the organ of articulation; and the only difference between them will be, that in the case of the former the organ of articulation retains the situation in which it was placed, when the sound was produced, and by its action upon the breath still keeps up a slight sound—which, however, is very different from the true sound of the consonant, while in sounding the consonant the position of the organ is immediately changed and it is therefore incapable of any prolongation whatever. We are the more inclined to adopt this opinion, from observing that the organs of articulation are certainly capable of producing very distinct and audible sounds without the concurrence of the larynx; as is the case in whistling, &c. and we think ourselves justified in coming to the conclusion that the difficulty of producing isolated consonant sounds arises from the universal practice, in speech, of accompanying them with the vowels which are indeed necessary to give them sufficient body to be heard at any distance.

Whether this view of the case be correct or not, it is still true, that the mutes, without the concurrence of a vowel, emit as distinct a sound, as the semivowels, and that the only difference between them exists in the former being incapable of prolongation.

We before remarked that the sound of the vowels is modified by the organs of articulation; and it is, probably, by the different position of these organs, that all the varieties of the vowel sounds are produced. We may also remark, that the position of the organs of articulation, in sounding some of the consonants is the same that it is in pronouncing certain of the vowels. This is the case with the consonant w and vowel sound oo. This coincidence has led Dr. D. to adopt the opinion that the two sounds are identical, and accordingly he has expunged the w from the list of elementary sounds. In this we think he is most clearly in an error. The difference between them consists in the fact, that in w, the effort is made upon the organ of articulation alone, while in the oo, the vocal organs act in concert with the organs of articulation. A little attention to this

circumstance, we think, will bring every one to the conclusion that w is a consonant.

The same remark will apply to y, which Dr. D. is disposed to consider as a vowel, under all circumstances. Y has two sounds, the sound of i—a vowel sound—and a consonant sound of its own. This last sound is generally heard before u, and is frequently written before the other vowels. It is determined to be a consonant sound, as in the case of w, by the fact that the organs of articulation and of sound act in succession and not simultaneously.

A chapter on *Digestion* concludes the first volume of Dr. Dunglison's work on Physiology. In this part of the work, he advances an opinion, which, we think, will settle the dispute respecting absorption, that has so long distracted the Medical Profession. This is, that the veins absorb all substances that are again to pass out of the system—the lymphatics are assimilating organs, and take up nothing, but what is to be applied to the wants of the system. Experiment and analogy both appear to us to favor this opinion, and we think it probable that the sentiments of the physicians will very soon settle down upon this point.

We shall here leave the author for the present. We are unwilling to do so, however, without cordially recommending his work to the profession in this country. We know of no writer upon this subject, whose reading is more extensive or accurate in every collateral science, than Dr. Dunglison's. He has searched every department of science for the information necessary to unravel the secret operations of the animal œconomy—he has judiciously selected from the great mass of material before him, such as are best adapted to the subject—he has divested them, in a very great degree of useless speculation, and has expressed them with a degree of clearness, accuracy, and precision, which will render them intelligible to every reader. His style is, on the whole, a good one, though rather unequal. Its general character is clearness and precision, though in some parts of the work, it bears the marks of hasty composition, and is deficient in that conciseness of expression which is essential to a standard work in any profession. F.

Art. V.—Physical Education.

Remarks on the Influence of Mental Cultivation upon Health. By Amariah Brigham. Hartford, C. 1832.

First Annual Report of the Society for promoting Manual Labor in Literary Institutions, including the Report of their General Agent, Theodore D. Weld. New-York, 1833.

Physicians have two great classes of professional duties—to prevent diseases, and to cure them. To these might advantageously be added a third—to collect their debts; but we shall not insist on that at present—nor even discuss the curative department. Our object is the preventive, or to give it a higher dignity than can be conferred by a Latin cognomon—the *Prophylactic.*

It has, however, been seriously doubted whether prophylactic medicine, can be cultivated without abridging the profits of the profession. The venerable and thrifty adage—"an ounce of prevention is better than a pound of cure," cannot, say these sceptics, by any kind of logic, be shown to connect itself with both patient and physician. To the former, continue they, the word 'better' exclusively applies, and, therefore, 'twere better for the latter to eschew the maxim. This argument deserves grave consideration; but having, perhaps hastily, "made up our mind," that the interests of the faculty are identified with those of society, we shall proceed in the affirmative; still retaining the negative, however, among the *jura reservanda* of the profession, to be called up if occasion should require.

Assuming, then, for the present, that the faculty should labor to preserve society from disease, we proceed to solicit the attention of both, to the subject which is suggested by the works prefixed to this article.

Not limiting ourselves to the influence of labor as a means of preventing disease in students, and young persons generally, we propose briefly to consider the philosophy of physical education at large.

Intellectual education, is the exercise of our inquiring and reflecting faculties—moral education, of our sentiments, affections, and propensities—physical education, of our bodily organs. To attain the condition so beautifully expressed by the ancients, *mens sana in corpore sano*, the whole of these varieties of exercise or education, must be carried on at the same time. If any organ or faculty, either of body or mind, be neglected, it falls into debility and disorder and never fails to react on the others and limit their perfectibility.

In simple and rural states of society, education is chiefly physical. The body is well developed, hardy, and comparatively free from disease; but the mind remains uncultivated and inefficient. In civic and highly civilized society, on the other hand, the body is neglected, and becomes a prey to the active and over excited faculties of the soul. Thus *inertia* of body and overaction of mind, are two great sources of disease in civilized communities. Still, notwithstanding men's maladies both of body and mind are more numerous in the literary; than in the hunting, pastoral, and agricultural states, the race multiplies in a greater ratio; and the examples of a protracted and cheerful old age, are proportionally more numerous. Were this not the case, civilization would be a curse instead of a blessing.

The problem involved in this statement, is not difficult of solution. Civilization multiplies diseases, but it, also, multiplies remedies, both preventive and curative; and according to the ratio in which these are developed, will be the happiness of society, so far, at least, as relates to disease, both of body and mind. Here then we find one of the great elements of the usefulness and dignity of the medical profession, and are enabled to perceive, that but for its helping hand—the *tactus eruditus*—society could not continue to advance in civilization. But let us come up to the business which lies before us.

Physiology will in vain attempt to lift the veil, which conceals the union of mind and body. It cannot reveal to us how the moral is combined with the physical; how ideas and motives are connected with atoms, having magnitude, density, weight and other mechanical properties. But we *can* observe

the effects of the varying states of the sentiments and faculties of the mind, on the matter of which our bodies are composed; and, inversely, perceive the influences which the different corporeal conditions, exercise over the mental faculties. Thus we can ascertain the laws of their reciprocal action, and these constitute the philosophy of physical education.

The body is not only the machine by which the mind acts, in most of the duties and pursuits of human life, but its domicil—its home; and in proportion as this is well ordered and comfortble, *cæteris parabus*, will be the serenity, activity, and efficiency of the mind.

The body, however, is not merely the habitation of the mind and the machine by which it acts on other bodies, but the medium through which it acquires a knowledge of their properties and movements. The senses are the inlets of all our knowledge, and the impressions made on them are purely physical—that is, the action of matter upon matter. To have correct information from without, the organs of sense must be well developed, properly disciplined, and free from disease. The impressions must be transmitted to the mind through the nerves and brain, but to do this successfully, they must be kept in a state of health.

When children are reared in the country and study but little, they generally subsist on a simple diet, keep regular hours of sleep, and take abundance of exercise, in the open air. Thus trained, their bodies are well developed, and morbid sensibilities—the pains and penalties of violated physical laws—are almost unknown.

The causes which, in civilized society, interrupt the proper development, and disorder of the functions of the body, in children, young persons, and students, may be divided into *physical* and *moral*. Let us, *seriatim*, review the most prominent.

1. *Absurdities and excesses in diet.* The genius of civilization has not been backward in divising the means of a diversified gratification of the palate. He has even invented a name for the science of eating; and the gastronomer aspires to take rank

with the philospher. A thousand modes of regaling the appetite have been invented. The earth, the waters, and the air, have been ransacked for the raw materials, and all the arts of the kitchen laboratory, all the science of the professional cook, have been exerted to manufacture them into compounds, which are sweet to the taste, but to the belly, bitter. When children and students, taking but little exercise, are pampered on these compounds, their sensibilities are rendered morbid, their digestion deranged, and their bloodvessels over-distended. Irritations are set up in the stomach, lungs or brain; and the individual, literally eats himself into the hands of the doctor and the druggist; from which he seldom escapes without new desolations of purse and constitution.

2. *Abuse of stimulating drinks.* Children and young persons should drink milk or water. Their excitable systems are irritated by whiskey, brandy, wine, ale, and even cider undiluted. The same remark, is applicable to most students, before the age of forty. Children are injured by tea or coffee, much more than by alcoholic drinks, because they are much more used. The mother, who drinks those infusions, with comparative impunity, seldom comprehends why they should injure her daughters. It is for the family physician to disabuse her mind of this error, and thus preserve her fair off-spring from the disasters of excessive stimulation. Students commit upon their physical systems, the most deplorable outrages, with these facinating stimulants. No other drinks impart such excitement to the feelings and faculties of the mind. To the sprightly they are nectar; to the dull the waters of Pierus;—who under their influence, rise like Dædalus, and soar for an hour on the wings of genius. But all this excitement of the soul is purchased at the expense of the body, especially in early life, and in those of a delicate and excitable temperament. The male sex may take them with more impunity than the female; the sluggish with less injury than the sensitive; and the aged with an advantage they never confer on the young. When the latter indulge in them, they violate a law of their physical systems, and the

punishment is a black train of nervous disorders. The short and sunny day, is followed by a long dark night of pain and despondency.

3. *Abuse of Tobacco.* Tobacco is a narcotic poison, against which the *vis conservatrix naturæ* exerts her utmost power. When she yields, and the appetite is modified to the offensive qualities of the deleterious plant, the desire for it becomes importunate and uncontrollable. The contest between nature and fashion takes place in early life, and then it is, that the system—endowed with acute and delicate sensibilities—is most injured, by the impress of the poison. It is a great mistake, that the spitting, for which we are so renowned, and which is promoted by tobacco, is the chief cause of bodily injury from its use. It acts upon the whole nervous system, producing tremors of the muscles, and weakness and acidity of the stomach. To the phlegmatic it is least prejudical, and many persons, after the age of forty, derive comfort from the pipe and quid. But their sinister effects in early, far outweigh all their aggregated benefits in after life, and call loudly for a total proscription. In this case, as in that of most other vices, reformation must be dictated by the old, but commence with the young. The former will not give up the habit, but the latter might be preserved from it. Public sentiment should frown upon it; fashion look with contempt, and sarcasm utter its sneers. Masters, parents, and all who have the care of boys, should forbid the use of the noxious plant: and it ought to be a fundamental law of every academy and college, that no young man should be retained within its walls, who indulged in the loathsome and pernicious practice; lastly the physician should interpose his authority, and point out to the youthful imitator, that victory, in the struggle to which fashion invites him, would consist in his total defeat—in the triumph of nature, over the invasion of an absurd custom.

4. *Absurdities in dress.* These begin with our existence. The young infant is compressed in swaddling clothes, which often

bind the trunk of its body like a well-hooped keg. Thus a proper play and development of the viscera is prevented, and a foundation laid for disorder in their functions. The brain on which the heart is incessantly pouring such torrents of blood as predispose it to disease, is confined in its own heat with caps by day and by night, throughout summer as well as winter. Before the child is able to take the floor, its feet are encased in shoes and stockings; and when it can crawl abroad, they are never suffered to touch the earth, whose impress is almost as necessary to the healthful and perfect growth of man, as the worm on which he tramples. All children delight to go barefooted on the ground. It is one of their instincts—they flourish well under it. Indulged in this exposure, their feet are better knit together and stronger, they are more likely to escape that fundamental scourge of civil society *corns*, they run faster, jump higher, and take more exercise, they are less liable to colds and croup, and as they grow up are less obnoxious to consumption. Mr. Locke advised that children should wear shoes with holes in them. Let the rich observe the advice of this great philosopher wh studied man from soul to sole.

Did our daughters escape from the trammels of custom when they escaped from their "leading strings," one source of our professional income would be dried up. But fortunately for the faculty, a time arrives, when fascinated by fashion, as the sparrow by the serpent, they yield themselves up and walk deliberately into new shackles, prepared, and brandished to their view, by maternal affection. Now comes the bed of Procrustes—not however, to bring all our daughters to the same length, but the same breadth. The shaft of the animated column must be compressed in the middle; its proportions improved, till it shall approach the *beau ideal* of the *beau monde*, and captivate the *beaux*. What does it signify, if the stomach and lungs and heart like plants, sprouting beneath logs and stones, should germinate in new and unnatural directions, or be arrested in their growth, or fall into disease—will not the end justify the means? Who would wish to grow up according to nature, when art has wrested the sceptre from her hand? Who

so grovelling as to prefer sound health to the admiration of the fashionable world? Who would not violate the laws of nature rather than those of civilized society? Who would not prefer sickness and premature death, to the criticisms of the *haut ton?* But to be grave, compression of the chest from twelve to eighteen, is a prolific cause of dyspepsia, palpitations of the heart and consumption; of which all parents should be warned, and against which every physician should raise his voice. The great organs are not only more or less displaced, and impeded in their functions, but from the difficulty of making deep inspirations, a due degree of exercise cannot be taken and the individual suffers all the superadded effects of idleness and inactivity.

5. *Irregularities in sleep.* Children require more sleep than adults. The ambitious and excitable should not be permitted to abridge the necessary hours of sleep, for the prosecution of their class studies. They should never sit up to a late hour for this purpose. They study much better and with less injury to their constitutions, in the morning than at night. To retire early and rise early, is the law and inclination of childhood, which the usages of society frequently contravene. Young men devoted to study, frequently perpetrate the same violation, and never escape the penalty—weak, watery and inflamed eyes—head-aches—indigestion or irritability. The emulous youth should be admonished, that he cannot scale the heights of Parnassus by midnight assaults. Even the Ogre-boots of fairy land, would avail him nothing, if drawn on during the hours which nature has consecrated to rest. Repose favours renovation—and sound sleep exalts vigilance. Taking life throughout, as many hours should be spent in sleep as in study. In childhood and youth more, in old age more, in manhood less—but the student should never persevere when nature flags and yawns with exhaustion. The richest heritage of man, is a sound constitution: one of his greatest follies, its early desolation.

6. *Immersion in a confined Atmosphere.* Close confinement is abhorrent to the taste and constitutions of children and youth.

It is scarcely less pernicious in middle life. Even in old age it is prejudicial. Fresh and pure air is one of the essential supports of human life. It acts as a general stimulant on the surface of the body, and of the lungs and ærial passages; it defecates the blood, and through the medium of that fluid animates every part of the living mechanism. All students and literary men should expose themselves daily to the breezes of the fields and woods, where, in common with the plants among which they stray, they will inhale the "breath of life," and return to study with freshened energies of body, and brightened faculties of mind. Dr. Franklin has left us a paper on the *fidgets*, for which he advises exposure of the body to a cool and fresh air. The student who follows his example, may hope to equal him in health if not genius, learning and fame.

7. *Neglect of Exercise.* Motion is the great law of nature. Rest is found no where on the surface of the earth. The air and waters are in perpetual agitation, and even the soil is a great laboratory, in which atoms of matter are unceasingly acting on each other. The living plant has its intestine movements, and takes exercise in the winds. The animal kingdom presents two kinds of action—internal and locomotive; the former occurring in the apparatus of nutrition, the latter in the organs of external relation. They reciprocally sustain and quicken each other. The suspension of the latter constitutes apparent, of the former, actual death. When their momentum is greatest—provided they are regular—the individual enjoys the soundest health, feels happiest, and is most efficient. When the internal movements are weak he is debilitated—when irregular diseased—in both cases the external, are reduced in activity and power. On the other hand, when these are defective, the internal speedily languish, and this languor reacts on the locomotive. Hence we deduce the physical necessity of exercise.

Parts which are not exercised, like faculties of the mind not educated, grow imperfectly—perform their functions awkwardly—and readily fall into disease. If the slothfulness be universal, every part is feeble and inefficient. Imperfection is stamped

upon the whole machine. The dandy of the drawing room, cannot expand into an Apollo Belvidere, nor the sluggard into a Hercules. Animated grace and living strength, can come only from exercise. Thus all who aspire to beauty symmetry and power of body, should take diversified and laborious exercise. The muscles which are most exercised grow fastest—have most firmness—and the greatest facility of movement. Ease and adroitness come only from appropriate exertion. The senses are under the same law. If not trained by occupation, they are defective in sensibility, and the movements necessary to their efficient action. But let us look at the influence of locomotive movements on those of the viscera. This influence is chiefly exerted through the great function of respiration. In exercise the diaphragm and abdominal muscles compress and agitate the organs of digestion—whereby the portal circulation is accelerated, the bile ducts emulged, and the peristaltic action of the stomach and bowels promoted. Thus digestion, chylification and elimination, receive a salutary impulse. Those who take active exercise will have little need of Mr. Halstead to knead their abdomens. Exercise quickens the venous circulation, and returns the blood more rapidly on the heart. The great "forcing pump" thus stimulated, waxes strong and gives to the circulation the momentum necessary to "deeds of daring." The blood, being impelled more copiously through the lungs, those organs expand, and the chest enlarges; the pulmonary vessels acquire a tougher texture and become more firmly knit together; thus hæmorrhages are warded off, and consumptions, asthmas and dyspnœas set at defiance. Meanwhile the blood is defecated of its impurities, which circulating throughout the system as a poison to all the organs—irritate their sensibility and depress their powers. Hence, in a great degree, the cheering and salutary influence of a single hour of active exercise in the open air, when the sedentary student feels restless, nervous and fidgetty. In a similar way exercise, drawing and impelling the blood into the skin, maintains the function of perspiration, and still further purifies the vital fluid; while it promotes the generation of animal heat, and renders

foot-stoves and fall-baths, the common resort for cold feet, entirely superfluous. In addition to all this, exercise increases interstitial absorption, and removes the decayed elements of the living fabric to make room for new ones;—thus giving sweetness to the flesh, and limiting the generation of fat. Of all the nostrums for corpulence, exercise is, indeed, the only one which needs not the aid of certificates and affidavits.

Finally, exercise exerts upon the brain and the nerves of sense and motion the most salutary influence. It prevents stagnations and congestions of blood within the skull and spinal column, and supplies the nervous matter with that which has just been purified in the lungs. It conducts the "vital fire" from the brain into the muscles—diffuses it according to the great laws of the system—preserves the viscera from conflagration, and the brain itself from the withering consequences of its concentration within the delicate mechanism of that great organ. Thus exercise prevents or cures headaches and vertigoes—breaks up and disperses many of the clouds which, at times, hang over the affections, and detaches the films from the "mind's eye"—rendering the confused palpable and the obscure bright.

It is difficult to lay down particular rules for exercise. The following deserve attention, but every physician should prepare himself to give correct advice, on this as on every other part of hygiene.

1. The younger the child the more time should be devoted to play and the less to study.

2. Play and every kind of exercise should, as far as possible, be carried on in the open air, and not limited to fair and dry weather.

3. The child should be supplied with some immediate motive; its mind cannot embrace the remote one—the improvement of its health and constitution. Even grown up children, as all experience shows, must have some other incentive than the dread of disease and doctors' bills to induce them to take sufficient exercise.

4. Exercise should be so diversified as successively to bring every muscle into action.

5. It should be taken daily, and carried so far as to induce perspiration and fatigue.

6. It should not be taken immediately after meals—especially dinner.

7. The more precocious the intellect and the more delicate the bodily frame of the child or young person, the greater is the necessity for exercise;—the more pernicious are confinement and protracted study.

8. Parents and teachers should carefully distinguish between mere relaxation from books and active exertion. Hard study for four hours a day, without exercise, will do more harm, than eight hours with it.

9. It is equally necessary to both sexes.

10. It should be continued to old age, when it is often highly beneficial, but should then be of the passive kind. The aged are not locomotive, and should be exercised.

To enumerate all the imperfections and infirmities of body, which spring from absurd modes of life and neglect of exercise, by the young and the studious, would make a "black book" as large as Mrs. Royall's, which, however, we have not seen; and could not fail to scandalize many of our friends of either sex, we shall therefore drop the matter short, and proceed to the influence of moral causes on the constitutions and health of the young and studious.

With every progressive step in civilization, the mind acquires greater influence over the body. The stirring, sturdy and illiterate young farmer of Ohio, the "hoosher" of Indiana, and the "leather-stocking" of the entreme frontiers of Illinois, Missouri and Michigan, grow up, flourish and decay under the influence of physical causes, like the tall grass of the prairies or the hardy oaks of the forest, among which they pursue their simple occupations. With minds as little cultivated as the fields of the hunter, and but few of the passions called into play, their iron nerves are seldom made to vibrate, by the intense intellectual excitement, and the 'thousand and one' deep

and swelling emotions, which agitate and enfeeble the sensitive nervous systems of the scholar and the child of luxury and indulgence. To register the various ills which "flesh is heir to" from excessive cultivation of the faculties and emotions of the mind, without adequate bodily exercise, would exceed the limits of the longest and dullest review. We shall decline the ungrateful task; and, as physiologists, proceed to inquire into *modus operandi* of intellectual culture, on the physical systems of those who are too studious, or, what is far more common, too indolent to take exercise.

Cultivation of the mind, is attended with exercise of the brain. When carried too far, without exercise of the body at large, the whole nervous system is rendered morbidly sensitive, and the influence which animates it, swells and revels in the mechanism, like electricity among the summer clouds at noon day, which send forth awful explosions, with but few visible flashes. In this condition the patient, for such he really is, finds every variety of painful sensation compressed into a single hour; or feelings of gloom and despondency, chace each other like the waves of the dead sea.

In this state, almost the whole excitement of the body is accumulated in the nervous system; which notwithstanding the monopoly, performs its duties imperfectly, because its movements are disordered. Hence the various functions fall into confusion, and every organ is more or less diseased. The liver secretes but little, or a vitiated bile; the bowels become torpid; the stomach fails in its action; and the enfeebled heart struggles and palpitates under its load.

But of all the organs the brain itself suffers most. Like every other part, when irritated an unwonted determination of blood engorges its vessels—the delicate pulpy matter is compressed—too much heat is liberated, and inflammatory actions are set up. Thus maddened, it sends forth the mandates that awaken epilepsy, chorea hysteria, spasms and neuralgia; or withholds the genial influence necessary to firm muscular motion, and debility, paralysis, or apoplexy is the consequence. Should none of these maladies arise, its functions, as the organ of

feeling and intellect, may disclose the internal agitation, in the various frightful forms of petulance, fickleness of temper and purpose, irresolution, hypochondraism, melancholy, fatuity, mania and suicide.

Extreme cases of this kind are certainly not common; but no observing physician has failed to note a great variety of nervous affections, which manifestly arose from the moral causes we are now considering.

The friends of education especially in the eastern states, might almost be classed with the *causæ morborum remotæ.* They have enlarged the sphere of school studies, multiplied the variety of books to an indefinite and perplexing extent, allured the inquisitive by an endless succession of novelties, impelled the ambitious by stimulating the spirit of rivalship; and made hard study not merely a personal and social, but a moral duty. They would elevate society with a high pressure engine, and hang heavy weights upon its safety valve. Their object is noble—their motive exalted—their benevolence glowing, but they have too often overlooked the physical consequences of the application they would inspire, and seem not constantly to have remembered, that many of the gifted, but delicate and weakly, must perish prematurely under such intense and diversified study; while all should have bodily, proportionate to their intellectual exercise, or they can neither form strong constitutions nor preserve sound health.

One of the great faults, the greatest perhaps, of modern education, is, that it depends too much on books and too little on observation; and one of the greatest misfortunes of the modern student, is, that the progress of science has given him too much to study. But however great may be increase of books, the student should never lose sight of the momentous truth, that he can only study them with success, while he preserves his health unimpaired; and that to do this, he must invigorate his frame by recreation or labor in the open air. Such was the method of the ancients; and it may not be unprofitable to inquire for a moment, into the causes which have superseded it, with methods so pernicious to health.

The first which occurs to us, was the overthrow of the Roman Empire. Under this catastrophe, learning and science took refuge in the cloister, and was protected by religion. But the anchorite was sedentary and inactive; and when he restored the heritage to modern Europe, it came as something to be enjoyed and cultivated, by patient and protracted sittings before the shelves of the book case, and no where else.

The next cause in order, was the application of gun-powder to military operations; by which science was substituted for bodily strength, and lost its personal character. Thus it was no longer necessary to educate heroes to feats of muscular power, and the physical became still more widely divorced from the intellectual.

In the third place the art of printing, has multiplied books, inspired a taste for reading, withdrawn us from the study of nature by observation abroad, and immured us within the walls of academies and colleges.

Lastly, the lapse of time and the progress of discovery, have enriched the archives of knowledge with vast treasures of mathematical and natural science, which can not be unlocked and examined, without patient and arduous labor in the observatory, the closet and the laboratory; so that of necessity, the modern student leads a more sedentary life, than the ancient.

What other causes may have contributed to dissolve the natural and necessary connexion between study and exercise, or the education of the body and the education of the mind, we need not stop to inquire. The fact of their separation is as indubitable, as its consequences are disastrous to the student of the present day. Let us indulge in a brief review of the advantages and pleasures, enjoyed by the students of antiquity, and contrast them with the confinement, the deprivations and bodily imfirmities of our own age.

The motives for promoting a good development and preserving health and vigor, in ancient times connected themselves with the great functions which men were called upon to perform in society; while the methods by which they of necessity acquired their knowledge were favorable to the same objects. Having,

as we have seen, when compared with the moderns, but few books, they supplied the aliment of thought by observation, and the practice of observation kept them active. The great map of external nature lay unfolded before them, all fresh and beautiful from the hand of the Creator—they traversed its untrodden wilds—clambered up its frowning and unscaled precipices—descended into its deep and unexplored valleys—meandered its streams, as they murmured through vast and unpeopled solitudes—marked the external features of general nature—listened to the chorus of the animal kingdom, from the bee of mount Hymettus to the lion of Abyssinia—inhaled the fragrance of the vegetable world, and feasted their vision on its forms and colors, in a region, which, more than any other, combines, the useful plants of the north with the luscious fruits and beautiful flowers of the south—their eyes wandered among the clouds and noted the forms and colors, which portend changes in the constitution of the air, the causes of which philosophy had not yet revealed—beyond the clouds they counted the stars, and gave names to the various constellations—finally, turning upon themselves, they studied man in society as he then was, not as he had been, by observation instead of historical research, made him display himself in *action* through all the stages of life, and looked on, applauded and registered his feats, in the Elian, funeral and Neptunean games, in the gymnasium, the portico and the grove—in the arena, the circus, the forum and the senate! Philosophers then travelled on foot from city to city, as a means of that improvement, which is now sought by crawling from alcove to alcove of our mouldering libraries—inhabiting a genial climate, they read and conversed, and thought, in the wide and moving air—the teacher then assembled his pupils around him in open colonnades, or under the shade of majestic and embowering trees—where they breathed a pure atmosphere—while the fanning breezes kept down that fever of the brain, which consumes the student of modern days!

What a luxury study must then have been, compared with that of the school house, where children are compelled to sit *still* (an outrage on their physical nature,) for six or eight hours

of the day on wooden benches, scrowghing each other, in a hot and confined atmosphere, and committing to memory the language, and literature of the nations, who gathered together from the great field of nature, the heritage which has *unfortunately* descended to posterity. Had only their methods of study reached us, the constitution both of mind and body in modern times, would have been superior to what it now is. We have, let us repeat, too many books—and rely too much on reading—they consume more time than can be spared from exercise and observation—they substitute for our own, the observations and reflections of other minds—they present us with results which should be attained by our own inquiries. The mind does not grow healthfully on the food that has been digested by a hundred generations—we should observe the phenomena of the natural and moral world for ourselves—compare them for ourselves—and draw conclusions for ourselves. We should consider book studies as but for our education—the rising generation, male and female, should be encouraged and required, to exercise their senses on the qualities of all surrounding bodies—in the waters, on the earth, in its caverns and recesses, in the atmosphere and in the physical heavens—they should be incited to exercise their muscles, in walking, running and riding—in archery—in the play ground—in hunting and fishing—in searching out, collecting and preserving minerals, plants and animals —in gardening and husbandry—in various mechanic arts, and philosophic manipulations.—In all these pursuits, while their limbs would expand in strength and beauty, their organs of sense would be rendered acute, and their minds enriched with new ideas. Thus raciness and originality of character would be secured; for to have these the mind must drink for itself, at the pure and sparkling fountains of nature.

In evidence of this, we find that the *country* and *villages*, have furnished a great proportion of the distinguished original genius of the world. It is true, that the mass of the people reside in these instead of the cities; but it is equally true, that the majority of our seminaries of learning are in or about the latter; and if these were the only sources of intellectual nourishment,

the cities should rear up all our great men. Such being far from the fact, we feel strong in the conclusion, that the occupations, the pure air and water, the simple diet, the natural hours of meals, of sleep and of labor, the natural scenery and the natural events of rural life, are equally favorable to the growth of mind and body. Under such circumstances, both are less fettered and compressed by artificial usages, and tyrannical superintendence, than in cities; where a thousand rules and regulations, unneeded and unknown in the country, are absolutely necessary, to enable the dense masses of population to abide each other's movements—to stand up against each other's intellectual elbowings.

The youthful civic mind is more scholastic and disciplined—more amenable to precedents—deeper fraught with learning. When a problem is to be solved or an object accomplished, it seeks for the means amidst its stores of book acquired knowledge, and should it find none, knows perhaps no other resource:—the young mind of the country, draws its intellectual treasures from the earth, the woods and fields—nature is its schoolmaster, all her objects its books—it roams at large over her works, and undertakes the solution of the little problems which she offers at every step. It may solve none of them correctly, but that signifies nothing—it is exercised, it contemplates the relation of cause and effect—it thinks—it thinks by itself and for itself. Or, passing from natural problems to ends and objects for attainment, it must devise for itself the means of their accomplishment, and these it must invent and apply, unaided by precedent or even elementary instruction. Thus from necessity, it becomes self-dependent, resolute, inventive, and original. Its learning may be small, but knowledge is the *desideratum*, and its knowledge is great. It acquires, at least, a taste for executing in its own way, and an ability for inventing and applying new means to the accomplishment of new objects, the strongest sign and highest attribute of useful genius.

Let such a mind, sustained by the frame and energies of a body which has been knit together amid the snows and storms, and piercing winds of a healthy country, be, in due time, sub-

jected to academic and civic culture, not carried so far as to enervate either the mental or corporeal powers, and we shall not be disappointed in the fruits of genius it will bring forth. They will indeed be the products of a sound and cultivated mind in a sound and vigorous body.

Men and women who have been *thus* educated, are no hot house plants, leaning against the wall, and requiring to be watered—blooming but in one degree of heat—prone to disease in the midst of a thousand artificial excitements—shrinking from every blast—wilting after every frost, and dying when exposed to the storm:—but the green trees of the lofty forest—the earth's plumes and pride—requiring no foster mother but nature—raising their voices amidst the tempest—recruiting, beneath the ice of winter for new displays of vigor and beauty in spring—throwing back the burning rays of summer—shedding a copious harvest of fruit in autumn, and perishing but from age.

But let us return from declamation, to the useful facts and sound common sense of the works prefixed to this article.

The object of Dr. Brigham's book, is to disclose the pernicious influence of forced mental culture, precocious ambition, and inflamed curiosity, on the health and constitutions of children, young persons, and students generally. The first section presents the brain as the material organ by which the mental faculties are manifested, and abounds in just views of its physiology. Coinciding with the best writers, Dr. B. regards insanity as the consequence of morbid action in the brain, but this may be and often is, the consequence of moral causes.

"Insanity furnishes further evidence that the brain is the organ by which the mind acts, for this is not a disease of the immaterial mind itself, but of the brain, resulting often from some injury. Such a diseased state of the organ of the mind, of the very instrument of thought or of some part of it, deranges the intellectual faculties, just as a diseased state of the stomach deranges digestion. The immortal and immaterial mind, is, in itself, surely incapable of disease, of decay and derangement, but being allied to a material organ upon which it is entirely dependent for its manifestation upon earth, these

manifestations must of course be suspended or disordered when this organ is diseased."

* * * * * *

"I might adduce many more cases to prove the very intimate connexion between the brain and the mind, and that it is a defective brain which makes the idiot, a diseased brain which causes delirium and insanity; and that all the various states of mind produced by alcohol or by opium, &c., arise from the disordered action in the brain which these articles produce; that the weak mind manifested by the infant, or the feeble mind by the aged, is produced by a small, undeveloped, or enfeebled and diseased brain, and not by a change of the immaterial mind itself. But cases enough have been cited to prove these truths. And if we do admit them, and consequently that the brain is the organ by which the mind acts, all will acknowledge the necessity of guarding this organ most carefully, of exercising it with extreme caution, of not endangering its delicate structure at any period of life by too much labor, or prevent its full development by too little; for the regular exercise of all the organs of the brain is necessary to prepare them for the active and powerful manifestation of the mental faculties.

"The healthy condition and proper exercise of the brain, is therefore far more important than that of any other organ of the body, for we might as well expect good digestion with a diseased stomach, or good music from a broken instrument, as a good mind with a disordered, enfeebled, or improperly developed brain. And yet, how little regard has been paid to these important truths, in the cultivation of the mind! While people are exceedingly fearful of enfeebling and destroying digestion, by exciting and overtasking the stomach, they do not appear to think they may enfeeble or derange the operations of the mind by exciting the brain, by tasking it when it is in a tender and imperfectly developed state, as it is in childhood."

In his second section, our author discusses the condition of the brain in early life, and the effects of its excitement and unnatural growth on the manifestations of the mind. In infancy and childhood the organ is soft, exceedingly vascular, and grows rapidly. Hence it is tender, excitable and prone to disease, beyond the other organs of the body.

"It is, therefore, deeply important, that the natural action of the nervous system should not be much increased, either by too much exercise of the mind, or by too strong excitement of the feelings, lest at the same time the liability of children to nervous diseases be increased, and such a predominance given to this system as to make it always easily excited, and disposed to sympathize with disorder in

any part of the body; giving a predisposition to hypocondriasis and numerous and afflicting nervous affections.

"Mental excitement as has been shown, determines an unnatural flow of blood to the head, and increases the size and power of the brain, just as exercise of the limbs enlarges and strengthens the muscles of the limbs exercised. The wonderful powers of mind which an infant or child sometimes manifests, and by which he surpasses ordinary children, do not arise from better capacity in the mind itself of the child, but in fact from a greater enlargement than usual, of some portion or the whole of the brain, by which the mind is sooner enabled to manifest its powers. This enlargement takes place whether the mental precocity arises from too early and frequent exercise of the mind, or from disease, and it must arise in one of these two ways. But in my opinion, mental precocity is generally a symptom of disease, and hence it results that those who exhibit it die young. This fact ought to be specially remembered by parents, some of whom regard precocity, unless accompanied by some *visible* disorder, as a most gratifying indication; and on account of it task the more the memory and the intellect of the child. Sometimes, however, it is accompanied by visible alterations of the head, and then the fears of parents are greatly awakened. Take for instance the disease known by the name of rickets. Every person understands that this is a disease of childhood, and according to the best medical authorities, it arises from the irritation or inflammation of some organ, and frequently of the brain. Its most characteristic symptoms when it affects the brain, are an enlargement of the head, and premature development of the intellectual faculties. On examining the heads of those who have died of this disease, the brain is found very voluminous, but ordinarily healthy."

Every physician, as our author has done, must have observed in children affected with disease in the hip joint, or the spine,—which is generally or always, altered with a *scrophulous* diathesis,—a similar precocity of the intellectual faculties and moral sentiments. When such children die, their loss is deeply deplored, *because* they gave such great signs of bright genius and pure morality; but these early developments are anticipations of the future, and no more foretoken great intellectual power, in coming manhood, than a hypertrophy of the heart is auspicious of a vigorous circulation; or the rapid growth of a young tobacco plant from the ashes of a Kentucky brush-heap, presages a stalk thirty feet high. The same remark is almost equally applicable, to the hypertrophy of the infantile mind, from excessive education. We every day see adults deformed by spinal disease in infancy, who manifest no mental superiority;

and quite as often, find the brilliant intellect of childhood, obscured at full maturity, by minds which had been pronounced dull and common place.

The following remarks which close the section we are passing over, are eminently deserving the attention both of parents and preceptors. They contain much sound physiology.

"The activity of most of the organs of the body can be very greatly increased; they can be made to perform their functi ns for a while with unusual facility and power. I will dwell upon this fact a little. The child, for instance, may be gradually accustomed to eat and digest large quantities of stimulating animal food. I have seen an instance of this kind, and when I remonstrated with the parents on the impropriety and danger of allowing a child but two years old, such diet constantly, I was told that he was uncommonly robust; and indeed he appeared to be in vigorous health; but soon after this he had a long inflammatory fever of an unusual character for children, which I attributed at the time, to the stimulating diet allowed him. This diet appeared also to have an effect upon his disposition, and confirmed the observation of Hufeland, that "infants who are accustomed to eat much animal food become robust, but at the same time passionate, violent and brutal." A child may also be made to execute surprising muscular movements, such as walking on a rope, and other feats; but these are learned only by long practice, which greatly developes the muscles by which the movements are executed. It is from this practice, from frequent and powerful action, that the muscles of the arms of blacksmiths and boxers and boatmen, and those of the lower limbs of dancers, and those of the face of buffoons,* become strikingly enlarged when compared with the muscles in other parts of the body. Every employment in which men engage brings into relatively greater action particular parts of the system; some organs are constantly and actively exercised, while others are condemned to inactivity. To make therefore one organ superior to another in power, it is necessary not only to exercise it frequently, but to render other organs inactive, so as not to draw away from it that vital energy which it requires in order to be made perfect.

"The important truth resulting from these facts, that *the more any part of the human system is exercised, the more it is enlarged, and its powers increased*, applied equally to all organs of the body; it applies to the brain as well as the muscles. The heads of great thinkers, as has been stated, are wonderfully large; and it has been ascertained by experiment, that they frequently continue to increase until the subjects are fifty years of age, and long after the other portions of the

*People who are in the habit of indulging anger, very often develope certain muscles of the face to such a degree as to impart to the countenance an expression of ill nature, when they are not in anger.

system have ceased to enlarge. "This phenomenon," says M. Itard, "is not very rare, even in the adult, especially among men given to study, or profound meditation, or who devote themselves, without relaxation, to the agitations of an unquiet and enterprising spirit. The head of *Bonaparte*, for instance, was small in youth, but acquired in after life, a development nearly enormous."*

"I would have the parent, therefore, understand that his child may be made to excel in almost any thing; that by increasing the power of certain organs through exercise, he can be made a prodigy for early mental or muscular activity. But I would have him at the same time, understand the conditions upon which this can be effected, and its consequences. I would have him fully aware, that in each case, unusual activity and power is produced, by extraordinary development of an organ; and especially that in early life, no one organ of the body can be long exercised, without the risk of most disastrous consequences. Either the over-excited and over-tasked organ itself will be injured for life, or the development of other and essential parts of the system will be arrested forever.

"From what has been said hitherto, we gather the following facts, which should be made the basis of all instruction; facts which I wish often to repeat. *The brain is the material organ by which all the mental faculties are manifested; it is exceedingly delicate, and but partially developed in childhood; over-excitement of it when in this state, is extremely hazardous.*"

In section third our author sets forth his views on the consequences which have resulted from inattention to the connexion between the mind and body, and attempts to show, that the best minds are not produced by early mental culture. We shall present our readers with the opening paragraphs.

"Teachers of youth, in general, appear to think, that in exciting the mind, they are exercising something totally independent of the body, some mysterious entity, whose operations do not require any corporeal assistance. They endeavor to accelerate to the utmost the movements of an extremely delicate machine, while most unfortunately they are totally ignorant of its construction. They only know that its action and power may both be increased for a while, by the application of a certain force; and when the action becomes deranged, and the power destroyed, they know not what is the difficulty, nor how it can be remedied. Fortunately they do not attempt to remedy it themselves, but call in the physician, who, if he affords any relief at all, does it by operating on a material organ. If medical men entertained the same views with teachers, they would, in attempting to restore a deranged mind, entrely overlook the agency of the body, and

*Dictionnaire des Sciences Medicales, Vol. 22. Art. Hydrocephale.

instead of using means calculated to effect a change of action in the brain, would rely solely upon arguments and appeals to the understanding. For if the mind may be cultivated independent of the body, why may it not also be remedied when disordered, without reference to the body?"

After reprobating the various means to which parents and teachers resort for stimulating children to inordinate exertion of their mental faculties, our author observes:—

"I beseech parents, therefore, to pause before they attempt to make prodigies of their own children. Though they may not destroy them, by the measures they adopt to effect this purpose, yet they will surely enfeeble their bodies, and greatly dispose them to nervous affections. Early mental excitement will serve only to bring forth beautiful but premature flowers, which are destined soon to wither away, without producing fruit."

The whole of the chapter is deeply interesting. We shall venture on one extract more.

"The early history of the most distinguished men will I believe lead us to the conclusion, that early mental culture is not necessary, in order to produce the highest powers of mind. There is scarcely an instance of a great man, one who has *accomplished* great results, and has obtained the gratitude of mankind; who in early life received an education in reference to the wonderful labors which he afterwards performed. The greatest philosophers, warriors, and poets, those men who have stamped their own characters upon the age in which they lived; or who, as Cousin says, have been the "true representatives of the spirit and ideas of their time," have received no better education when young than their associates who were never known beyond their own neighborhood. In general, their education was but small in early life. *Self Education*, in after life, made them great, so far as education had any effect."

Section fourth is devoted to the opinions of distinguished physicians in different countries, on the influence of early mental cultivation on the minds and bodies of children. The mass of authority is voluminous, and merits the profoundest attention. We have only room for a specimen, and shall select a part of that, which is drawn from France.

"In France, the education of youth has engaged the attention of many of the most learned and distinguished men. Numerous treatises

upon the subject have been published, urging the importance of physical education. M. Friedlander, in a late work dedicated to M. Guizot, recently one of the ministry, thus speaks of early instruction. "From the highest antiquity we have this rule, that mental instruction ought not to commence before the seventh year." M. Friedlander thinks this rule is correct, and says that our climate, which necessarily confines children much of the time within doors, has led to the idea of teaching them early, and thus making them prodigies. He gives the following table for the hours of rest and labor, which he says is adopted by many instructors.

Age.	Hours of sleep.	Hours of exercise.	Hours of occupation.	Hours of repose.
7	9 to 10	10	1	4
8	9	9	2	4
9	9	8	3	4
10	8 to 9	8	4	4
11	8	7	5	4
12	8	6	6	4
13	8	5	7	4
14	7	5	8	4
15	7	4	9	4

M. Ratier, in an essay on Physical Education of Children, which was crowned by the Royal Society of Bordeaux in 1821, thus speaks of early mental instruction. "The labor of the mind, to which some parents subject their children not only too soon, but in a wrong direction, is often the cause of their bad health, and causes nearly all those who are distinguished by precocity of the intellectual faculties, to perish prematurely; so that we seldom see a *perfect man;* that is one who exhibits an equilibrium of the Physical, Mental and Moral faculties." M. Julien, late editor of the Revue Encyclopedique, in his large and valuable work on *Physical*, *Moral*, and *Intellectual Education*, remarks,—"All the pages of this work repel the double reproach, of wishing to hasten the progress of the intellect, and obtain premature success, or retard the physical development of children, by neglecting the means necessary to preserve their health. We have constantly followed the principle of Tissot, who wished that infancy might be consecrated to those exercises which fortify the body, rather than to mental application which enfeebles and destroys it." Again he observes, "The course to be adopted with children for the first ten years of life, is neither to press or torment them; but by plays, exercise of the body, entire liberty wisely regulated, and good nourishment to effect the salutary and progressive development of the Physical, Moral and Intellectual faculties, and by continual amusement and freedom from chagrin, (which injures the temper of children) they will arrive at the tenth year without suspecting that they have been made to learn any thing: they have not distinguished between

study and recreation; they have learned all they know freely, voluntarily and always in play. The advantages obtained by this course, are good health, grace, agility, gaiety and happiness; a character frank and generous, a memory properly exercised; a sound judgment, and a cultivated mind."

The preceding chapter, is devoted to the intensely interesting subject of insanity and nervous affections, as the offspring, in many cases, of mental cultivation and mental excitement.

Our author, from data drawn from his own state, Connecticut, supposes there cannot be less than 50,000 deranged persons in the United States, but this estimate we are disposed to consider much too high. Connecticut it seems has about 1,000, or one insane person for every 262 inhabitants! We feel convinced that in many other parts of the Union—in the West for example—the proportion of the insane to the sane must be much less; and, indeed, if there be a reality, as we think there is, in the opinion of our author, that excessive mental excitement, tends to produce insanity, we might expect, *a priori*, that most of the states would be less afflicted with this malady, because they make less effort at early education than Connecticut.

"In view of these few brief facts respecting *Insanity*, we are forced to believe, that among the causes of the great prevalence of this disease in this country, are the following:—

"First, Too constant and too powerful excitement of the mind, which the strife for wealth, office, political distinction, and party success, produces in this free country.

"Second, The predominance given to the nervous system, by too early cultivating the mind and exciting the feelings of children.

"Third, Neglect of Physical education, or the equal and proper development of all the organs of the body.

"Fourth, The general and powerful excitement of the female mind. Little attention is given in the education of females, to the physiological differences of the sexes. Teachers seldom reflect, that in them the nervous system naturally predominates; that they are endowed with quicker sensibilities than men, and have imaginations far more active, that their emotions are more intense, and their senses alive to more delicate impressions; and therefore require great attention; lest this exquisite sensibility, which, when properly and naturally developed, constitutes the greatest excellence of women, should either become *excessive* by too strong excitement, or suppressed by misdirected education. If here was the proper place, it would be easy to show that efforts to make females excel in certain qualities of

mind which in men are considered most desirable,—to make them as capable as men, of long continued attention to abstract truths, would be to act contrary to the dictates of nature as manifested by the organization, and would tend to suppress all those finer sensibilities, which render them in every thing that relates to sentiment and affection far superior to men."

The sixth chapter is devoted to moral education, and in the seventh our author attempts to show, that timely and proper cultivation of the mind is not injurious, but beneficial to health and favorable to longevity; in the last, he treats of the influence of mental cultivation in producing dyspepsia, which he believes, in most cases to *arise* from an irritation of the brain. We cannot follow him through his ingenious reasonings on this topic, but hope our readers will examine the subject for themselves. The whole book is every way worthy of being introduced into the library of every physician, and we should like to see an edition of it published in the West, at a time when the subject of education is attracting more attention than has heretofore been bestowed upon it. Dr. Brigham is evidently a man of sound sense and industrious research.

We have inadvertently extended our notice of Dr. Brigham's book, till we have but little room for an account of Mr. Weld's Report. The object of this report, is to demonstrate by facts and arguments, that *Manual Labor* should be enjoined as a mode of exercise in all our academies and colleges. Mr. W. was himself educated in the Manual Labor Seminary of Oneida, New-York; and, as agent of the Society, travelled for a year, through the northern and western States, making observations, and collecting, on this subject, the experience and opinions of many eminent teachers and physicians, which he has skilfully embodied in his very able report to the Society. In this Report he has with great ability considered the necessity of physical exercise to the health and intellectual development of students and literary men; and shown, we think triumphantly, that nothing can be relied upon but manual labor, required as a part of their discipline. Left to themselves, students will not, in general, take exercise; it must be enjoined upon them for they know

not its value, and no other than manual labor can be enforced. As far as practicable it should be in the field, after that, in the workshop, where it should be of such kinds as keep them on their feet, exercise all their muscles, and produce fatigue. Mr. Weld has made a high and just estimate of the beneficial effects of labor, thus prosecuted, to the consitutions and health of all who persevere in it; and has, we think, shown most conclusively, that it not merely comports with, but actually promotes the finest cultivation of the faculties and affections of the mind. As physicians we are not immediately interested in the system, beyond this point; but Mr. W. as a political economist has gone further, and shown that students may be made to contribute largely to their support during the period of study; and, consequently, that if Manual Labor Seminaries were generally instituted, a much greater number would receive a competent and useful, if not a liberal education, than now do. Under this view, they become a national object of the highest interest, as they would contribute, most efficiently, to elevate into society a great number of valuable young men, who, under the present system, are doomed to remain in ignorance and obscurity. Thus they would greatly swell the amount of national intellect. But in this result the medical profession, in reference to its own dignity and usefulness, has a deep and direct interest. It is well known to all who are practically conversant with medical instruction, that by far the greater number of those who are put to the study of medicine, are young men from the middle walks of life, who have not had the means of acquiring an academical education and are entirely deficient in preparatory learning. Most of these, if manual labor academies had been within their reach, would have made themselves good scholars. Had such schools been instituted twenty years ago, the medical profession, in the United States, would have been very different from what it now is; and whenever they shall be established, they will be found to exert an early and most beneficial influence on the character of our physicians.

But we must lay before our readers one or two specimens

of Mr. Weld's very able report. The first that we shall select relates to the reciprocal influence of the mind and body:—

"The effects produced by different states of the mind upon the body are equally sudden and powerful. Plato used to say, that "all the diseases of the body proceed from the soul." The expression of the countenance *is mind visible. Bad news* weakens the action of the heart, oppresses the lungs, destroys appetite, stops digestion, and partially suspends all the functions of the system. An emotion of shame flushes the face; fear blanches it; joy illuminates it, and an instant thrill electrifies a million nerves. Surprise spurs the pulse into a gallop. Delirium infuses giant energy. Volition commands, and hundreds of muscles spring to execute. Powerful emotion often kills the body at a stroke. Chilo, Diagoras, and Sophocles, died of joy at the Elean games. The news of a defeat killed Philip V. One of the popes died of an emotion of the ludicrous, on seeing his pet monkey robed in pontificals, and occupying the chair of state. Muley Moluck was carried upon the field of battle in the last stages of an incurable disease. Upon seeing his army give way, he leaped from the litter, rallied his panic stricken troops, rolled back the tide of battle, shouted victory, and died. The door-keeper of Congress expired upon hearing of the surrender of Cornwallis. Eminent public speakers have often died, either in the midst of an impassioned burst of eloquence, or when the deep emotion that produced it had suddenly subsided. The late Mr. Pinckney of Baltimore, Mr. Emmet, of New York, and the Hon. Ezekiel Webster, of New-Hampshire, are recent instances. Lagrave, the young Parisian, died a few months since, when he heard that the musical prize for which he had competed was adjudged to another. The recent case of Hills in New-York is fresh in the memory of all. He was apprehended for theft, taken before the police, and though in perfect health, mental agony forced the blood from his nostrils. He was carried out, and died.

"The experience of every day demonstrates that the body and mind are endowed with such mental susceptibilities, that each is alive to the slightest influence of the other. What is the common sense inference from this fact? Manifestly this: that the body and the mind *should be educated together.* The states of the body are infinitely various. All these different states differently affect the mind. They are causes, and their effects have all the variety which mark the causes that produce them. If then different conditions of the body differently affect the mind, some electrifying, and others paralyzing its energies, what duty can be plainer than *to preserve the body in that condition which will most favorably affect the mind.* If the Maker of both was infinitely wise, then the highest *permanent* perfection of the mind can be found only in connection with the most healthful state of the body. Has infinite wisdom established laws by which the best condition of the mind is *permanently* connected with any other than the best condition of the body? When all the bodily functions are perfectly performed, the mind must be in a better state than when

these functions are imperfectly performed. And now I ask, is not that system of education fundamentally defective, which makes no provision for putting the body in its best condition, and for keeping it in that condition?—a system which expends its energies upon the mind alone, and surrenders the body either to the irregular promptings of perverted instinct, or to the hap-hazard impulses of chance or necessity?—a system which aims solely at the development of mind, and yet overlooks those very principles which are indispensable to produce that development, and transgress those very laws which constitute the only groundwork of rational education?

Such a system sunders what God has joined together, and impeaches the wisdom which pronounced that union good. It destroys the symmetry of human proportion, and makes man a monster. It reverses the order of the constitution; commits outrage upon its principles; breaks up its reciprocities; makes war alike upon physical health and intellectual energy, dividing man against himself; arming body and mind in mutual hostility, and prolonging the conflict until each falls a prey to the other, and both surrender to ruin.

Almost at random we shall transcribe another specimen, in which our author pleasantly and pungently hits off the folly of the governors of our literary institutions, who recognize and recommend to the pupils necessity of exercise, without providing the means:

"Shall we plod through the same process forever? Shall we trudge on in this profitless round of exhortation and remonstrance, doling out the same old lamentation, and reading at every step the same stale homily upon exercise, which rarely if ever made a practical convert. Shall we play the fool any longer, by repeating an experiment in the face of ten thousand failures under the same circumstances, and when in the very laws of human nature there is 'confirmation strong' that every *future* effort will result in failure? Let us suppose a case.

Suppose all our existing institutions were established solely for the education of the *body*. Suppose each had a complement of teachers, full courses of lectures and experiments, merely for promoting the beauty and strength, symmetry and perfect action of the *body*—all the requisitions leaving utterly out of sight the whole circle of science and literature. Suppose three hours of relaxation from these exercises are allowed the students daily. Suppose moreover, they are told they have *minds*, and are eloquently urged to devote these three hours each day to mental improvement. But not a single facility is furnished for the accomplishment of this object. No apparatus, lectures or experiments, no libraries, no cabinets, no recitations, no teachers, no requisitions for study, and no regulations designed to afford the least *aid or countenance* to the student in the

culture of his mind; and not only so, but these three hours of leisure are divided into four or five portions, and are distributed over the day, and so *entangled with other arrangements* as to make it exceedingly difficult to employ them in mental cultivation. Thus, instead of receiving any encouragement to educate his mind, all the exercises of the institution are arranged in such a manner that the student is harassed, subjected to great inconvenience in all his efforts to acquire knowledge, finds himself unsustained by the example of his teachers, who are most zealously engaged in the improvement of their *bodies* alone, public sentiment is against him, and he becomes disheartened, and rather than carry on a contest without auxiliary or ally, he surrenders at discretion, and lounges away his leisure, in conformity with the fashion around him. Still, once a quarter, perhaps, he is dos'd with a lecture upon the *importance of educating his mind*, and exhorted to provide himself with all the requisite facilities, and set about the work in earnest during his leisure hours!! What would such appeals avail? They would excite unmingled contempt and disgust; and the more eloquently they were urged, and the oftener repeated, the more they would be regarded as downright mockery and insult. Well might the student exclaim, 'What! will you taunt the misery of a starving man, by exhorting him to eat while you deny him bread, or will you put him in fetters and handcuffs and then place food before him, merely to mock his anguish by tempting his appetite? Do you exhort us to store our minds with science, and yet deny us the means of its acquisition? Give us access to libraries and cabinets, laboratories and apparatus, experiments and lectures; furnish us with teachers, make *requisitions* for study and recitation, for composition, discussion and declamation; make specific regulations, have a *system*—then we will believe you *honest* and *in earnest*.'

> "*Conduct* hath the loudest tongue. The voice
> Is but an instrument on which a man
> May play what tune he pleases. In the *deed*,
> The unequivocal, authentic *deed*,
> We find *sound argument*."

The application of this supposition to the case before us is manifest. Look at our institutions as they are. All not only admit the importance of exercise, but advise and urge students to take it regularly and in considerable quantities, and yet have not made *a tittle of provision for it;* have furnished not a single facility; have made no arrangement of studies and recitations, calculated in the least to favor it. All their regulations are profoundly silent about health and physical improvement; passing over the body as if beneath their notice, leaving the whole matter of physical education to the supervision of chance and accident, to be regulated by freaks and fantasies, under the dictation of ignorance and caprice. Thus our institutions practically nullify their own precepts, by withholding every facility for reducing them to practice. They render their exhortations void, and their remonstrances of none effect, by refusing to furnish those means,

and to adopt that system, without which *they must of necessity become a dead letter.*"

We must bring this *lengthy* article to a close, by expressing the hope, that both the books under our notice will be purchased and read extensively. Dr. B. has pointed out the disastrous effects of early excessive application to study—Mr. W. has shown us how they may be averted. Few students of any age or of either sex, would suffer from hard study, if they could be induced to follow his excellent precepts. Indeed, we look upon Mr. Weld's book as one of the most valuable in its tendencies, which the age has produced. Should it promote as it ought, the union of manual labor, with academical and university study, it will constitute an epoch in society—multiplying to a great extent the number of educated men—disenthralling genius from the shackles of poverty—averting the infirmities of men of letters—dispersing the gloom which so often creeps over their minds, and favoring that fulness of years and knowledge, which is the natural effect of combined intellectual and physical cultivation.

Miscellaneous Intelligence.

ANALECTIC, ANALYTICAL, AND ORIGINAL.

I. Analectic.

Ad Sylvas Nuncius.

1. *Observations on Cold, as a Cause of Disease.* By Dr. *J. Clendenning.*—In our valued and oldest contemporary, the Med. and Phys. Journal, Dr. Clendinning has published a monograph on that popular and real cause of multiplied evils—COLD. Every medical practitioner is aware that nine-tenths of the diseases presented to his observation, are attributed by the sufferers to catching—"COLD"—and there must be some, nay, there must be much foundation in truth for so general a persuasion. From the cold wash of our first nurse, to the heats and chills of our juvenile sports, and unavoidable exertions of our riper years, the effects of cold, or rather of atmospherical transitions, thermometrical and hygrometrical, are daily conspicuous to the common as well as the medical observer. It has been recorded by Dr. Bateman that, during the winter of 1814, which was very severe, the number of patients at the Cary Street Dispensary exceeded by 700 the ordinary average in other years! Dr. Heberden also records the fact that, in January, 1795, the whole mortality of London, was *double* that of the succeeding January. We question if the redoubted cholera of January, 1832, has produced such a tremendous change in the balance of our final accounts with grim Death.

The author of this monograph, a gentleman of highly cultivated mind and excellent education, general as well as professional, has arranged his observations under six heads—definition of terms—morbific properties of cold—diseases of cold—principal forms of morbific cold—circumstances most favorable to the morbific action of cold—and lastly, the means of preventing diseases of cold. These subjects, so clearly arranged, are scientifically treated, and ingeniously illustrated by Dr. Clendinning. We regret that, from the terse and didactic manner in which the talented author discusses each point, we are quite unable to attempt an analysis of the paper. We are therefore induced to insulate one or two propositions and give them in the writer's own language, as they will prove interesting in themselves, and afford a fair specimen

of the whole performance, which we urgently recommend to the attention of our readers.

"FORMS OF COLD MOST DANGEROUS.

The principal and most active forms of morbific cold met with in practical life are three: *moist atmospheres, damp clothing*, and *currents of air*.

Moisture of itself is not injurious to health. Moist warm atmospheres are indifferent to the vigorous, and they are generally favorable to the weakly. *Wet* summers are healthful in this country, provided they are not cold; the summer of 1797 furnishes a very striking proof of this truth. 'From the middle of May it was,' says HEBERDEN, 'one of the wettest ever remembered, it was nevertheless in every respect a healthy year.' Not so, however, *wet cold* seasons. BATEMAN assures us 'that the succession of rains to heat' (i. e. of a cool or cold moisture to warmth,) 'is amongst the most active causes of disease of the chest and abdomen,' which are the most destructive complaints in this metropolis. 'A foggy atmosphere,' he again observes,' acts much more injuriously than a clear (i. e. comparatively dry) one of equal cold. Indeed there is,' he assures us, 'no condition of the air so invariably pernicious, so chilling and oppressive to the organs of respiration, as that frequent combination of frost with fog in the metropolis.' Of the truth of the preceding observations of that judicious physician (Bateman,) I have had frequent experience amongst the poor inhabitants of Westminster for the last three years, during which I have had considerable opportunities of watching the operation of weather and season.

The danger of inhabiting or sleeping in *damp apartments*, is proved by examples of daily occurrence in private life. The superior morbific activity of a *damp atmosphere* depends on its superior conductive power. A humid air absorbs free caloric with much greater avidity and rapidity than a dry.

Damp clothing is another active and dangerous form of cold. The mischievous energy of wet clothes is so well known, as to require no illustration. The great capacity of evaporating water for the matter of heat, is the cause. The frigorific power of damp clothing may be conceived from this consideration; that the only protection or antagonist influence that man requires to enable him to defy the summer fires of Sahara or South Carolina, is the power of cutaneous exhalation. Although inhaling and immersed for sometime in an atmosphere exceeding very far the temperature of boiling water, the bakers' girls were found, by Reaumur, to have pertinaciously retained their normal heat. After twelve or fifteen minutes' immersion in an atmosphere many degrees above 212°, BLAGDEN, BANKES, DOBSON, and other experimenters, found their thermometrical heat little differing from that of ordinary health. Such is the frigorific power of perspiration, or, in other words, of evaporation from the surface.

But *currents of air*, perhaps, of all causes of diseases of cold, are the most active and extensively mischievous. *Damp clothes* may be avoided; *foggy atmospheres*, and extremely *humid cold winds*, are

unknown in many seasons and climates: but *currents of air* must be encountered. The atmosphere is constantly in a state of agitation; its intestine and progressive motions, while, on the one hand, they promote our well-being by ventilation, endanger, on the other hand our health and our existence by their refrigerant operation. The destructive power of exposure to cold winds without adequate protection, is strikingly illustrated by the narrative published by Dr. CURRIE, in the Philosophical Transactions for 1792. 'Of several individuals that clung to the wreck, two sat on the only part that was not submerged; of the others all were constantly immersed in the sea, most up to the shoulders; three only perished, two of whom were generally out of the sea, but frequently overwhelmed by the surge, and at other times exposed to heavy showers of sleet and snow, and to a high and piercing wind.' Of these two, one died, after four hours' exposure; the second died three hours later, 'although a strong healthy man of twenty-eight, a native of Scotland, in the flower of life, early inured to cold and hardship, and very vigorous both in mind and body.' The third that perished had been a weakly man. The remaining eleven who had been more or less completely *submerged*, were taken from the wreck next day, after 23 hours' exposure, and recovered. The person amongst the whole who seemed to have suffered least was a negro: of the other survivors, several were by no means strong men, most of them had been inured to the warm climate of Carolina.' In the case of the first two that perished the morbific power of the 'high piercing wind' was aided no doubt very powerfully by evaporation. In Dr. Currie's account of his experiments on the cold bath. we have the following interesting illustration of the superior refrigerant power of wind or air in motion. After continuing in the water fifteen minutes, the subject of some of his trials exhibited 'little or no diminution of his heat in rising into the air in a perfect calm, though during a frost; while the like exposure in a second trial, under similar circumstances, but with a north-east wind blowing sharply, produced a rapid diminution (of animal heat,) though the air was many degrees warmer' than in the preceding experiment.

I have above cited several examples of even death instantaneously produced by the chilling influence of a piercing north wind. Every valetudinarian is aware of the inconvenience and even danger of exposure to blasts from chinks and other apertures in rooms otherwise close.

Prevention of Diseases of Cold.

The remarks I have to make in this section will come under the head of *Clothing*, *Exercise*, *Internal heat.* or stimulating ingesta, and *Diaphoretic Means*, as hot diluents, bed-heat, &c.

Every considerable augmentation of refrigerant influence requires on the part of the subject exposed, proportionate precautionary means for the protection of health: these preventive measures must consist either of increased clothing or of the use of means capable of compensating for defect of personal coverings, by diminution of intrinsic organic susceptibility. The class of preventive means last alluded to, will be by and

by considered, under the heads of exercise and stimulating ingesta: at present I shall confine myself to the question of clothing.

Transition from a tranquil into an agitated or progressive atmosphere, as from indoors into the open air, from the inside of a stage coach to the outside, &c., is accompanied with a great increase of the refrigerant power, which the frame has to encounter, and will, in many instances, above all if moisture be present, require additional protective covering. When the exposure is but short, or the weather is fine, or the constitution vigorous, and reactive energy therefore ample, such precaution, no doubt, will generally be quite unnecessary: yet those compensative conditions must be often wanting in a greater or less degree, and exposure, therefore, not provided against by appropriate internal or external means, will often prove hazardous, and sometimes fatal. In how many cases has phthisis been traced to an indiscretion of the sort now alluded to; to a journey on the top of a stage-coach in bad weather, or by night with insufficient clothing, &c. In how many instances have youth and accomplishment, and loveliness, fallen victims to the noxious influence of cool, perhaps damp out-of-doors atmospheres in passing from one rout to another, or returning from scenes of splendid riot to domestic solitude and repose.

In passing from a state of activity or exertion to one of relative quietude, precautions are often required for security; such transitions occur when horse or foot exercise is exchanged for riding in an open carriage, or gestation on the water, and obviously demand the like precautions with transitions from walking, running, &c., to sitting, lying down, &c. But of all conditions that require provident measures, that of sleep stands most in need of them. In that condition the calorific function is less excited, less exposed to incidental stimulation from physical agents, or moral impulses, or muscular exertion, than in any other. Less heat is evolved; the body is much more readily chilled, the cutaneous functions more easily disturbed, and every derangement of internal parts, producible by frigorific impressions on the skin is more promptly effected. In the state of sleep, it is therefore, if ever, necessary to guard against exposure to cool moisture, currents of cool air, and every other cause of diseases of cold. All this is very plain, and is generally known, and requires no further notice. Before quitting this topic, however, I would briefly enter my protest against the absurd and mischievous extreme to which many, perhaps most people, carry the use of woollen and other night clothing. It is common for females, in particular, who seldom, amongst the richer classes at least, know the comfort, the real luxury of woollen or chamois coverings for the shoulders, chest, feet, &c., and who wear below the knee, on the arms, upper part of the chest, neck, or head, either slight or no covering, to retire to sleep on beds of feathers, under half a dozen or more folds of one material or another, mostly woollen, and this in soft, nay even in summer weather, and with every avenue for fresh air, every door and window, closed, and bed-curtains perhaps drawn closely all around: from such violent transitions what wonder if inconvenience result! The sleep is more or less

disturbed by dreams and feverish uneasiness; the strength is not properly recruited, and the sleeper awakes unnerved, languid, indolent, often hot or chilly, generally anorectic. Under such circumstances, a susceptibility of inconvenience and injury from cold, above the average, may reasonably be looked for, and will, I believe, seldom fail, if occasion offer, to show itself. Nor is the relaxation attending long immersion in warm air the only disadvantage in such cases; for there is obviously the further one of long-continued respiration of an impure atmosphere to be taken into the account: a disadvantage of no trifling importance in the cases of such as retire early to small rooms, and emerge into daylight after protracted slumbers.

Another point in which many fail, is the adaptation of clothing to season, weather, &c. No one questions the propriety of such adaptation in the abstract; but the number of those that commit the grossest errors on this subject in practice is enormous. What can be more obvious than the temerity of wearing the same kind and quantity of clothing in the heats of summer and frosts of winter; yet there are not wanting in the very first rank of the medical profession persons chargeable with such imprudence. I recollect very well the substance of an argument I once had with a fellow-traveller, an Austrian cadet, on his way through mountains in mid-winter, *en voiture*, from Vienna to Laybach. He obviously suffered inconvenience from want of warmer clothing, yet would not admit the propriety of adding even a flannel vest to his wardrobe. He considered it, he told me, 'militarisch,' soldier-like, to dispense with woollen under-coverings. A like answer would no doubt be given by many defaulters on this side of the water. Ladies would hold it to be *feminine*, gentlemen, *manly*, &c., to dispense with the extra under-clothing proper for winter and cold weather. But indolence, temerity, and fine breeding, are bad protectives against inclement seasons.

Exercise. An observant individual can seldom fail to know when, from universal weakness or incidental exposure, he is in danger from external cold; and a provident man will easily, in general, foresee future exposure. When actually exposed, the great prophylactic is muscular exertion, and, if possible, locomotive exercise. RITTER'S advice is excellent, when he recommends that we should counteract the chilling influence of a draught or of a damp atmosphere, to which we are constrained to expose ourselves, by proportionably increased exercise in order that we may be enabled to compensate for the augmented expenditure of caloric by an increased evolution of it. The calorific power of general muscular exertion is such that, but for the antagonist frigorific power of cutaneous exhalation and evaporization, there can be no doubt that even moderate exercise would be incompatible with health, and that violent locomotive exertion would, in comparatively tranquil atmospheres at least, prove destructive of life. It is so great, that, daily persevered in, and aided by clothing sufficient to protect the skin and extremities from the immediate contact of an intensely cold air, it has been, on innumerable occasions, found sufficent to bear man harmless through the most formidable trials, as the

narratives of Parry, Franklin, Scoresby, and many others, abundantly testify.

Respecting the use of *hot drinks* and *aliments at once nutritive and stimulant*, before and during exposure, little need be said. All experience is in their favor; every traveller on our stage-coaches knows the protecting power of warm tea and coffee, punch, &c.; there is even unequivocal experimental proof of the power of stimulant drinks to sustain the animal temperature under exposure. During my experiments on the cold bath, I found, in some trials with warm drinks and wine, (taken before immersion,) the sensation of cold little less lively indeed, and the access of shivering little retarded; but the pulse and heat under the tongue were much less reduced by the cold than in other trials made without such preparation. As a preparative, however, for protracted exposure to cold, &c., pure vinous liquors are obviously unsuitable means: the excitement they produce is transitory, and is followed by dangerous depression of calorific power: and their repeated and free use is, amongst other objections, liable to this, that it favors that somnolency which is one of the most perilous effects of cold. I have little doubt that the protective power of punch, negus, &c. is more owing to the hot water than to the pungent spirit.

The fourth division comprises the means of cutting short incipient diseases of cold. On the supervention of chillness and other symptoms, effects of recent exposure to cold, such as slight headach, horripilation, dejection of spirits, hoarseness, slight sore throat, coryza, lachrymation, cold feet, anorexia, lumbar pains &c., we should have immediate recourse to the shelter of a warm bed; all solid aliment should be withheld; our only ingesta should be warm diaphoretic drinks. Diluted vinous liquors taken warm, such as weak hot punch or negus, are often excellent diaphoretics in such cases. But, in general, the alcoholic ingredients may be safely dispensed with, and when the excitement is considerable and headach is present, it cannot, without rashness, be recommended. The preceding measures are usually sufficient, if early enough employed, to cut short incipient derangements from cold. Where irritation is considerable, which is indicated by flying pains in the back and limbs, lively sense of cold, smart shivering, &c., opiates had better be employed in addition to the means already mentioned: for this purpose Ritter highly extols a combination of opium and camphor, two or four grains of the latter with from the eighth to the fourth part of a grain of the former every second hour, until the horrors, headach, pains, &c., shall have vanished or greatly declined. I have no doubt of the utility of such a combination; but pure laudanum or opium combined with warm diluents will probably be found fully as efficient. Dover's powder is also an excellent remedy. Another remedy, at once efficient and agreeable, is the common effervescing draught, containing half a scruple of nitre, a drachm (more or less) of the compound tincture of camphor, and in some cases half a drachm or more of nitrous æther, and as much of Hippo wine, to be repeated every third, fourth, or sixth hour. Where the feeling of cold, as evidenced by horripilation, rigors, &c. is lively, warm bathing, local or general, followed up by some of the remedies just proposed, is very proper.

Prevention of disease is better than cure: it implies a more masterly degree of skill and power in the prescriber, and a smaller expense of care and vital power on the part of the sick. In practical medicine of the first indication in dignity as well as time, is prevention: in other words, the avoidance or counteraction, as far as possible, of morbific agencies; and when illness arrives, the employment, without loss of time, of the means best calculated to disperse the earlier groups of organic preternatural conditions or symptoms, and thus, by anticipation, get rid of the complications and difficulties so soon superinduced and accumulated upon primary simple and tractable derangements by the influence of sympathy and habit: with these views, I have thought it advisable to append to my observations on the morbid effects of cold, remarks on the circumstances that most favor the action of morbific cold, on the means best calculated to neutralize its agency, and on the remedies that should be employed after injurious exposure to prevent the establishment of any nosological effect or regular disease of cold: on the plan, as on the execution, it is the reader's province to decide."

The whole monograph which would have well deserved a place in the Cyclopædia of Practical Medicine, or in Dr. Copland's Dictionary, contains the most convincing proofs of the author's learning, talents, and discrimination.

2. *On Muscular Contractions, and Animal Electricity.*—The change which takes place in a muscular fibre at the moment of contraction, consists in its assuming a zig-zag flexuosity, and is best illustrated by the following diagram, which at the same time points out the amount of shortening.

This may be stated to be nearly one-fourth, or 0.23. The above appearance is most readily detected by submitting a very delicate muscle, as the sterno-pubic of a frog, to a microscope; and at the same time we may observe, that the summits of the angles, *c*, *d*, *e*, correspond precisely to the junction of the minute nervous filaments, which, when the muscle is relaxed, run parallel to each other, and perpendicular to the muscular fibres. Admitting the correctness of this opinion, it will easily be conceived that the living muscle is really a galvanometer, and one too of extraordinary sensibility. In all cases, where muscular contractions are produced, there also exists a developement of electricity. For the purpose of displaying this, let two similar platina wires be fitted to the ends of the branches of a galvanometer; let one of them be plunged into the muscles of a frog, and let the nerves of the animal be touched with the other, heated to redness; the contractions will be strong, and the deviation of the needle very sensible.

We have ascertained by experiment, that when two living animal substances are pressed together, however slightly, they acquire opposite states of electricity. It is sufficient for two insulated persons to touch hands, and then withdraw from the contact; to develope electricity sufficient to affect the electroscope of Caulomb.

The insulation of the nervous fibres is effected by the abundant fatty matter which surrounds them—for the discovery of this we are indebted to Vauquelin, who has shewn that it envelopes each of the fi res, and does not permit the electric fluid to pass from one to the other.

It is a subject of curious investigation to try to explain how some secretions, as the milk, chyle, urine, and the sweat are acid; while others, as the saliva, bile, &c., are strongly alkaline. The fluid from which they are all derived, namely, the blood, contains pure caustic soda, in sufficient quantity to impart to it manifest alkaline properties. If we seek among the facts of chemistry for an explanation of this difference between the constitution of the blood, and that of the fluids secreted from it, we may soon be convinced that the action of the voltaic pile is the only one which approaches to it. Moreover it appears possible, to imitate artificially the principal conditions of the secretions, and to separate from the blood by means of the pile, a liquid resembling milk, and from the food itself, a material resembling chyle. We cannot quit this most interesting subject without remarking, that if muscular motion and the secretions may be regarded as owing to electrical movements, the production of animal heat can only be suitably explained in the same manner; for it is known to electricians that the conducting wire acquires considerable heat during the action of the pile. M. de la Rive, the learned professor of chemistry at Geneva, was the first to seize the happy idea of referring the phenomena of animal heat to electric agency.

Dr. Edwards adduces some very ingenious observations in favor of the electrical theory of nervous actions; they are contained in a paper which was read before the Royal Academy of Sciences of Paris, in May, 1825, on "muscular contractions produced by bringing a solid body into contact with a nerve, without a galvanic circuit." The experiments consisted in passing a solid body along an exposed nerve, in the same manner in which we pass a magnet along a bar of steel which we wish to magnetise. In doing so, our object is not to act by pressure, or mechanical irritation, but rather to touch lightly various contiguous portions of the nerve successively; the sciatic nerve of a frog, which had been pithed, was exposed from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch, and a slip of oiled silk passed under it, to bring it better into view, and to render it more tense; the nerve was then gently touched with a slender rod of silver, and immediately the muscles were thrown into contractions; the same effects were produced when rods of copper, zinc, lead, iron, gold, tin, and platina, and even glass and horn, were used. It is proper, however, to state that iron and zinc rods caused far less vigorous movements than other metals; and that indeed the movements varied with the nature of the rod employed; but no satisfactory scale of the powers could be established. The question to determine is,

whether the muscular contractions are attributable to electricity, (which we know is developed every time one body exerts a mechanical action on another,) or to some other agent, perhaps unknown hitherto to us? If it be electricity, we may presume that we shall be able to vary the energy of the contractions, according as the nerve is made a more or less perfect conductor;—in its natural condition, lying among muscles, which are excellent conductors, a great quantity of the electricity is lost and expended; but if we place under the nerve a non-conducting body, as oiled silk, the whole of the electricity will be concentrated in the nerve. This precaution is had recourse to also in galvanic experiments, when it is wished to excite muscular contractions by very small quantities of electricity, such, for instance, as are produced by the mere contact of two metals. The above fact is therefore a convincing proof that the insulation of a nerve renders it much more energetically susceptible; so that when a circuit is established by means of two different metals, very obvious movements of the muscles may be produced, where, had the nerve been left in situ, it would have been insensible to all stimuli. Now similar phenomena occur in the experiments in which the nerve is merely touched with a rod, as above detailed; and it was found that the effects were scarcely notable if the nerve had not been previously insulated. After having in vain attempted to excite contractions by touching the nerve while resting on muscle, Dr. Edwards found that they might still be induced if the oiled silk were placed beneath the exposed nerve; and he was able to cause them alternately to appear and to cease by employing at one time a non-conductor, and at other times a conductor below the nerve. It was observed that the contractions were most readily induced by a quick and light touch of the nerve with the rod. On the whole, Dr. E. concludes that the contractions in the preceding experiments were dependent on electricity.—*Med. Chir. Rev. from Dr. Edwards on Life.*

3. *Treatment of Inflammation of the Lungs, by Large Doses of Tartarized Antimony.*—The following is a resumé of the experience of Dr. Munaret on this subject, taken from the Gazette Médicale, wherein the details are published.

Number of cases of acute inflammation of the respiratory organs, treated between the 28th of July, 1831, and the 15th of January, 1833, thirty-seven—viz. pleurisies and pleuro-pneumonies, 22; pneumonies, 15—which is about the rate of one case for every fourteen days.

Seasons.—Spring, 6 cases; summer, 8; autumn, 3; winter, 20.

Sexes.—Women, 17; men, 20.

Ages.—Among the females, between ten and twenty, 2; between twenty and thirty, 6; between thirty and forty, 4; between forty and fifty, 2; between fifty and sixty, 1; between sixty and seventy, 2.

Among the males, between ten and twenty, 6; between twenty and thirty, 3; between thirty and forty, 4; between forty and fifty, 6; between sixty and seventy, 1.

Results.—Recovered, 34; died, 3—viz. a blind idiotic girl and pa-

ralytic woman, affected for a long time with organic disease of the lungs; a woman who was doing well, when some other medicine was substituted for the tartar emetic, unknown to Dr. Munaret.

Description of the Method.—In most patients who are of sanguineous temperament, the practice commenced with a bleeding at the arm, repeated according to circumstances. In the more aged and feeble, the application of leeches to the chest was preferred. The *Rasorien* potion was administered thus:—

No. 1.—Distilled Water, ʒv.; Tartarized Antimony, gr. v.; Laudanum, gtt. v.

No. 2.—Distilled Water, ʒv.; Tartarized Antimony, gr. viii.; Laudanum, gtt. viii.

No. 3.—Distilled Water, ʒv.; Tartarized Antimony, gr. xii.; Laudanum, gtt. xvi.

A tablespoonful every two or three hours; cold water in abundance during the intervals.

As the disease declines, blisters, squills, &c.

Progress of the Disease.—Eleven days the mean duration. Diaphoresis is the constant indication of the medicine acting favorably; vomiting alone, or accompanied by purging, fourteen times in thirty-seven—viz. in eleven women and three men. A few drops of laudanum added to the potion, overcomes this effect. At other times, and indeed more frequently, purging takes place without vomiting, and without aggravating the principal affection.

Doses of Antimony.—From five to sixty grains, and upwards, in three days; mean quantity during the treatment, sixteen to twenty days.

Precautions.—Patient and those about him to be made acquainted with the probable effect of the medicine, otherwise it is apt to be discontinued in the absence of the practitioner.

Inference.—Tartar emetic, administered in large doses, and judiciously continued, with antiphlogistics and derivatives, is, to acute inflammations of the chest which are not complicated, what quina is to ague.—*Boston Journal.*

4. *Gonorrhœa and its Treatment.*—It is said to be a very easy thing to cure a gonorrhœa. We have not found it so. One physician will tell you that such a mixture always cures it in five days; another has a preparation that will do the work in three; and a third is so unfortunate that he can seldom entirely remove the complaint in less than a week. Authors of books allow us a month; writers in the periodicals sometimes confess half that time; but the proposer of a new remedy is seldom satisfied with anything more than a day or two. For ourselves, we have treated cases of all kinds, and at all stages of the disease. We have tried all the remedies that have been proposed for the last thirteen years; and when an oil or an extract, a pill or a draught, a simple injection or a patent wash, has been gravely pronounced, on good authority, to have removed the disease in a week,

we confess that the remedy has been seized with a great and perhaps foolish degree of confidence, and tried to our heart's content—content, not with its efficacy, but its total inefficiency. Treatment physiological, and treatment empirical, have always failed to cure one full half of all the cases that we have had the misfortune to encounter. The discharge will often disappear in a day or two, or a week or two, and it is in this state of cases that they have probably been published; but it almost invariably comes on again, and, as we before remarked, full one half of our cases have been protracted for five or six weeks, or terminated in comfirmed gleet.

There is one remedy yet to be tried here, which, like its predecessors, has recently been found, abroad, to surpass all others in the rapidity and effect with which it accomplishes its work. It is an injection of the nitrate of silver, in solution. This practice, the reader will recollect, is condemned by Carmichael, as extremely harzardous, and endangering the sanity if not the integrity of the bladder and its appendages. But it is well known that the precise nature of the action of this remedy on the mucous membrane, has not been understood until very recently. Twenty years ago, a proposition to rub inflamed tonsils or fauces every two or three days with a stick of lunar caustic would have been deemed sufficient evidence of unwarrantable rashness in a physician, if not absolute insanity or ignorance. Now the practice is most common, and its perfect safety and curative effects every medical practitioner has learnt from his own experience. It is neither surprising, then, that Carmichael should have condemned this proposal eight or ten years ago, nor that it should be now renewed and carried into practice—with what result, we have too much reason to doubt until it has undergone the test of trial under our own eye. Mr. Lucas, an Irish Surgeon, who has recently thus treated this disease, appears to have had a very just view of its obstinate resistance to ordinary remedies; and he says, with regard to these injections, 'the results of my experience as to its efficacy convinced me, that if it be used with a cautious hand, and at a proper time, no bad effects will result, and that this hitherto almost intractable disease will be brought still more under the control of surgical skill.' Those who have used the nitrate of silver most extensively, as a local alterative, are most established in their conviction of its power in subduing diseased action, and the safety with which it may be used on almost any portion of the mucous membrane within reach. Of all parts, that which is diseased in gonorrhœa is perhaps the one in which the greatest prudence will be required. But if the caution referred to by Mr. L. is uniformly observed, we should regard the remedy as perfectly safe, and as promising more than any other of recent origin.

Ten grains of nitrate of silver, dissolved in one ounce of rose water, constitute the injection. The urethra should be compressed with the left hand, about two and a half inches from the orifice, to prevent the solution from passing further down the passage, and then the solution injected freely over the diseased surface, by means of a small syringe of bone or ivory. In the cases related, this injection was made at 2

o'clock, and again ten hours after—and here the matter ended. We will offer the details of a single case, which was drawn up by a medical patient, and which appears to be a fair illustration of this treatment.

'Two days after connection, an unusual sensation at the orifice of the urethra directed my attention to the part, and I perceived a slight discharge. Twenty-four hours after, it increased, but supposing the person I had connection with would not have deceived me, I hesitated to use a remedy. The day following, the discharge was so great, of a yellowish color, accompanied with scalding, as to place beyond all doubt the existence of the disease. The nitrate of silver injection was used at two o'clock P. M., and at twelve that night. The following morning the discharge ceased, but there was no appearance of the purulent drop you led me to anticipate. At the end of two days, when the irritation caused by the injection had ceased, the gonorrhœal discharge returned. The injection was used again for two turns, as before, and at the same hours. The morning following, on pressing the urethra, I forced out a thick drop of purulent matter; no further discharge followed, and the pain gradually subsided.'

In gleet, this injection totally failed.—*Boston Journal.*

5. *The Anodyne Metallic or Galvanic Brush, (Scopula Anodyna Metallica. Annales Scholæ Clinicæ Medicæ Ticinesis. Auctore Francisco Nob. Ab. Hildenbrand, M. D. Paviæ*, 1830.)—Under this name, Francis Ernest Von Hildenbrand, Professor of Pathology and Practice of Physic at Pavia, describes a remedy rather singular, for the cure of various neuralgic affections. It consists simply of a bundle of metallic wires (*fascis e filis metallicis confectum.*) not thicker than common knitting wires, firmly tied together by wire of the same material, so as to form a cylinder about four or five inches long, and one inch or three-fourths of an inch in diameter. This is applied to the pained part, previously moistened with sea-salt, when it produces relief so instantaneous, it is said, that it appears to the patients like the effect of a charm. Occasionally the pain is immediately entirely extinguished, with the accompanying effect of a peculiar sense of emanation from the spot to which the brush is applied, causing the patients to believe that the pain is truly extracted by this method. On withdrawing the brush, the uneasiness occasionally returns, but in a more endurable form. The longer the application is continued, the more decided is the effect obtained; and phenomena so singular have resulted from its application, as even to astonish intelligent persons quite on their guard against any magical illusion.

In illustration of the remedial effects of this agent, Heldenbrand mentions the following case, which he designates as altogether singular and wonderfuld. A man of thirty, a porter by occupation, afflicted with violent periodical tic douloureux of the face (*metopodina,*) was admitted into the clinical wards of Parva. On applying the metallic brush over the left frontal nerve, the pain immediately disappeared

from that one, but fixed on the corresponding nerve of the right side, which had been previously free from pain. The very moment at which the brush was removed from the left frontal nerve, the pain returned to its original seat, and there remained, though already remarkably abated in intensity. By applying a metallic brush to each supra-orbital nerve simultaneously, the Professor banished the original nerve-ache of the left side, and at the same time prevented it from appearing in the opposite one. The same moment, however, a humming noise arose in each ear, and this also immediately ceased on the brushes being removed, when the nerve-ache returned immediately, though in a very mitigated form.

In order to obtain the desired effect from the use of the anodyne brushes, Professor Von Hildenbrand impresses the necessity of determining, as accurately as possible, the nature of the *neuralgia*, or the pathological state of the affected nerve. If the pain is merely *nervous*, that is, proceeding from subversion of the equilibrium between the *dynamic factors of the sensitive life*, as the Professor, in imitation of his father, expresses it, without material changes having taken place in the affected part—in which case it attacks periodically, like an intermittent disease, and leaves intermissions entirely void of pain—then the efficacy of the metallic brush may be pronounced to be almost infallible. But if, from the pain being uninterrupted, or at least void of perfect intermissions—from its aggravation under pressure of the part, from the conjunction of redness, heat, or swelling—there is reason to believe that the proximate cause of any case of facial neuralgia or hemicrania, consists in a state of active congestion, or sub-inflammatory irritation—then the metallic brush affords no benefit, nay, sometimes may augment the intensity of the pain. By these means Professor Hildenbrand thinks that the metallic brush, while it maintains at least a palliative therapeutic property in neuralgia of spasmodic character, may, in doubtful cases, furnish an auxiliary diagnostic sign, by the aid of which sub-inflammatory congestion may be distinguished from simple nervous erethism.

In the first experiments performed by Professor Hildenbrand, he employed brushes which where intentionally constructed of two kinds of metal; for instance, silver and copper wire, copper wire and zinc wire, or zinc wire and brass wire, the individual wires being mutually mingled and blended, on the supposition that electricity or galvanism, evolved by the contact of heterogeneous metals, might be the beneficial and sanative agent. He afterwards ascertained, however, that bundles of wires of one and the same metal produced an effect scarcely less speedy, but lost their anodyne influence as soon as they were covered by rust or verdigris. He further ascertained, that solid metallic bodies produce analogous effects, but in a much feebler degree than the numerous acuminated points of the bundle consisting of metallic wires. The nature of the metal, he adds, seems to cause no difference; for brushes of iron wire produce the anticipated alleviation in as great a degree as those of copper wire. If he could trust his observations, however, he thinks that he perceived a greater

degree of anodyne virtue in copper, iron, and gold, than in other metals.

Admitting that the effect is constant, to explain the theory of its production Professor Hildenbrand does not hesitate to deduce it from the laws of electricity. The original nature of metallic bodies, which are remarkably good conductors of electricity; the rapid action of the brush, if the aching spot has been previously moistened by the saline solution; the remarkable tendency of pointed bodies in attracting electricity; and the sense of emanation, and an agreeable coolness, combined with manifest alleviation of pain admitted by the patients, he regards as no trifling arguments to infer, in the disordered and aching nerves, a certain degree of *electric plethora*, or accumulation of animal electricity, which my be discharged by the application of a suitable conductor. This hypothesis, he lastly remarks, would accurately correspond with the notions delivered in his elements on the accumulation of the imponderable Biotic principle in various parts of the nervous system, as the proximate cause of nervous disorders which attack in paroxysms, and are dissipated by what he denominates autocratic explosions.—*Boston Journal.*

6. *Origin of Acephalocysts.*—The following case shows that a mechanical lesion may give to the part injured a disposition to form these parasitical productions. A girl, aged 16, of good constitution, though rather delicate, and who had not menstruated, fell while carrying a pail of water on her head, and struck the front of the thigh with so much violence that she could not rise for some moments. The part was fomented, and got so quickly well that in three days she was able to go about her usual avocations. A little swelling remained, but attracted no particular notice. This occurred in the summer of 1823. However, in June 1824 the swelling had become as large as a hen's egg, and continued to increase until, after severe exercise in the fields continued during the day, the tumor became so large and painful that the patient could neither walk nor stand. Dr. Held, of Fransbourg, by whom the case is related, was then consulted. He found an elastic tumor on the anterior part of the right thigh, and following the course of the rectus muscle. The thigh was about double the size of the other, but the skin retained its natural color. The surgeon at first took it for a lymphatic abscess, and recommended various remedies to relieve pain and inflammation. Nevertheless, fluctuation could not be perceived; but in its place a kind of elastic trembling, like that of firm jelly. However, caustic was applied, which penetrated to the fibrous covering of the thigh, but without reaching the tumor. The ulcer thus formed was kept open till December, but still the tumefaction increased, when at length, in February 1825, the tumor burst spontaneously. Pus, mixed with blood, flowed at first; and then, during five days, a yellowish serous fluid, with thousands of hydatids of different sizes, from a millet-seed to a hen's egg. The hydatids were spheroidal, colorless, neither adherent to each other nor to the adjacent parts. In nine months the swelling was quite reduced,

and the limb entirely restored.—*Boston Journal, from Hecker's Litterarische Annalen.*

7. *Internal Use of Chlorine in Nervous Fever.*—Dr. Clemens, of Frankfort, almost always commences the treatment of typhoid affections by an emetic, to which succeed gentle purgatives (neutral salts) continued for several days; five or six evacuations being produced daily. The head is generally relieved by this; but if not, from twelve to twenty leeches are then applied to the forehead, temples, or behind the ears, with cold applications to the head, and a blister to the back of the neck. If, towards the fifth day, nervous symptoms set in, he prescribes two drachms of chlorine water in three ounces of distilled water, this mixture being taken a spoonful in the course of the day. In administering this medicine, it is necessary to avoid adding any kind of syrup, because it favors decomposition, and it is also necessary to keep the bottle covered with dark paper, and in a dark place. On the sixth day, Dr. Clemens has the patient somewhat more warmly covered, and discontinues the cold applications. During the six or seven days which follow, he makes little change in the treatment, except that the dose of chlorine is gradually increased to four or six drachms daily, in three or four ounces of distilled water. Perspiration generally continues from the sixth or eighth day, and two or three stools are procured. After the fifteenth day the chlorine is changed for a light infusion of valerian, and veal or chicken soup. At the end of three weeks decoction of bark is administered, and meat allowed.—*Boston Journal, from Medizinisches Conversations. Number XV.*

8. *Endermic Therapeutics.*—The method followed in France is as follows:—Apply to the skin, which we wish to deprive of its epidermis, a portion of ammoniacal pommade, which is made of equal parts of lard and the strong liquor ammoniæ, and renew the application in five minutes; in five minutes more the blister will have risen, and we then remove the epidermis, and sprinkle the raw surface with the medicament. Half a grain of acetate of morphia, applied on a blistered surface near the origin of the sciatic nerve, has, in 24 hours cured a severe neuralgia of the limb; and sulphate of quinine has, when similarly used, quickly put a stop to an ague, when the medicine could not be administered inwardly.—*Ann. de la Med. Physiol.*

9. *Mode of dressing a Stump after Amputation of the Thigh.*—While the assistant draws down with both his hands, the skin and muscles over the face of the stump, let the surgeon pass a bandage round the pelvis, and roll it regularly and firmly round the limb from the hip to the wound; apply the two cut surfaces neatly together, and retain them there by cross pieces of bandage, secured by a turn or two of the roller: over these put a piece of simple dressing and a pad of soft lint, which are also kept in their place in the same manner,

without the use of any adhesive plaster, which are condemned as highly irritating to the wound.—*Journ. Complement.*

We quite approve of the above method, and have repeatedly observed the pernicious effects of applying adhesive plaster to large wounds. It gives us pleasure at the same time, to find that union by the first intention is now admitted into French surgery.—*Medico-Chirurg. Rev.*

10. *On the Changes which the Points of the Fingers undergo in Phthisis, &c.*—Hippocrates remarked that, in those who died of pulmonary consumption, the nails became bent—"phthisitis ungues adunci;" the assertion used to be called in question by many medical authors, but M. Pigeaux, who has directed his attention to this subject, and written a memoir on the etiology, symptomatology, and the mechanism of the fusiform development of the extremities of the fingers," fully confirms the truth of the aphorism. He examined the hands of 200 phthisical patients, and found that 167 of these were provided with "griffes Hippocratiques." Every tubercular patient does not certainly present this phenomenon, but in other diseases of atrophy the proportion is much smaller, not exceeding one in ten; it appears therefore, that a certain relation may be traced between thoracic maladies and the curving of the nails, although it occurs in other diseases, but certainly not so frequently. In 183 cases of diseases, not tuberculous, which had produced great emaciation, 17 exhibited the phenomenon of the curving of the nails in a very remarkable degree; of these 17, 9 were cases of organic affection of the heart—four of emphysema—two of asthma and catarrh, and two doubtful. An obvious dyspnœa existed in 13 of these cases, and also in almost every one of the 167 tubercular cases. I have no doubt that some connexion may be traced between all such maladies as create an impediment to the respiration or circulation, and the appearance of the nails alluded to, or, at least, between the former and the fusiform swelling of the last digital phalanx, with which the curving is generally associated. In 20 of the 167 tubercular cases, the patients had not lost their embonpoint. After many examinations into the cause of these phenomena, I am satisfied that the change in the points of the fingers precedes, and is the cause of, the curvature of the nails. Now this change consists chiefly in an œdematous infiltration of the pulp of these, by which the nail becomes mechanically forced out and forwards, and thus its end is curved round. As a general rule, it may be stated that the fusiform development of the last phalanx of the fingers, with the curvature of the nails, is generally indicative of the presence of tubercles, or of any derangement of sanguification.—If we notice particularly the change of form, we find that the swelling begins at the articulation of the 3d with the 2d phalanx—that it increases somewhat towards the root of the nail, which becomes the most projecting part, and then it tapers off to the end of the fingers the thumb and fore-finger are generally affected first. The progress of this affection does not depend so much on the "phases" of tubercular

disease, or of organic affections of the heart, as on the influence which these have on the general state of "hematosis" and of respiration. I have observed it to increase, diminish, and even to vanish, with the removal of the cause which had produced it. It is more common in women than in men; it is much more rarely seen in the toe-nails, with the exception of that of the great toe, the swelling of which, and the consequent "growing of whose nail into the quick, often gives rise to much pain and annoyance." To impress his readers with the importance of the above appearances, as symptoms, the author says that he has, by attention to this particular, repeatedly been enabled to foretell the severity and danger of a pulmonary catarrh, of a pneumonia, &c. which were supposed to be of an innocent nature! he, therefore regards it as a very unfavorable sign; it exists, he says, in sixtenths of consumptive patients; and, on the whole, it is more frequently seen in those who still retain their embonpoint, than in those who are much emaciated. If the above remarks be confirmed by experience, it must be considered as a valuable adjunct in guiding our diagnosis. The anatomy of this change will be readily understood from what has been stated above; the nail, separated from the finger, appears very little, or perhaps not at all curved; but when in situ, it is found to be elevated and pushed forwards by the infiltrated pulp *underneath;* the bone is not altered.—*Archives Generales.*

We do not vouch for the entire correctness of the preceding details, but deem them well worthy of attention by all enlightened physicians. —*Medico-Chirurg. Rev.*

11. *Ingenious Method of applying Nitras Argenti to Ulcers of the Cornea, &c. &c.*—Take a silver female sound, or large silver probe, and heat an inch of its extremity in the flame of a candle; then rub lightly upon it a stick of the lunar caustic; the salt is immediately melted, and unites with the metallic surface, coating it with a thin layer of caustic; if it be too thin, we have only to repeat the same process. When the instrument cools, it must be wiped clean, and then it is ready for use.—*Bullet. de Therap.*

12. *Roseolous Eruption, Caused by the Use of Copaiba and Cubebs.*—A young man, who had formerly had syphilis, for which he had never been regularly treated, was received into la Pitie, under M. Velpeau, for the treatment of an abscess of the abdomen, and a recent gonorrhœa. He was ordered a mixture of copaiba, cubebs, and magnesia; and after having taken it for six days, he began to experience a troublesome itching and burning over the whole head and front of the neck. The next morning there was a full eruption of roseolous patches over his body. These patches were scarcely at all elevated, of various sizes, irregular, some confluent, others distinct, and of a bright red color; they very much resembled the rash of measles. By discontinuing the medicine, and keeping the body cool, the eruption began to disappear on the third or fourth day. Three weeks subsequently, the patient having taken another dose of the same

medicine, the eruption reappeared.—*Am. Jour. from Archives Generales, Nov.* 1831.

13. *New Theory of the Sounds of the Heart.*—Dr. Bouanet, in an ingenious thesis, explains the phenomena of the two sounds in the following manner. The first, or dull sound, is produced by the shock, or impulse of the tricuspid and mitral valves against the auriculo-ventricular orifices, and this shock is caused by the pressure of the blood on the valves during the contraction of the ventricles. The second or clear sound arises from the succussion of the blood in the distended aorta and pulmonary artery, backwards upon the semilunar valves, during the dilatation of the ventricles; the author considering that at this moment, there is a tendency to a vacuum in the ventricle, and that therefore there must be a strong impetus, or rushing back of the blood upon the closed semilunar valves.

The first sound is heard at the commencement of the ventricular contraction; hence the idea that the sound was owing to the contraction of these cavities; and as the sound is momentary, it has been believed that the systole of the ventricles is also of the same brief duration. The cause of its being duller than the second sound is, that the tricuspid and mitral valves are larger, and that the parietes of the auriculo-ventricular apertures are thicker than the semilunar valves and the coats of the aorta and pulmonary artery.

The pulse is not quite synchronous with the first sound, but follows immediately after it. To explain the cause of this, we must remember that the tricuspid and mitral valves close at the very commencement of the ventricular systole, whereas the blood is not entirely expelled till the contraction is over. Such, however, is the rapidity of the contraction, that the second sound is heard almost immediately after the first. The second sound is more clear and sharp than the other, because the valves, by the shock of which it is produced, are smaller and thinner, and because the parietes which transmit the sound are more sonorous than in the former case.—*Am. Jour. from Med. Chirurg. Rev. from Journ. Hebdom. No.* 97.

14. *Ergot.*—Dr. Boettcher, at Mendelurtz, in the duchy of Altenbourgh, believing that the different energy of various specimens of ergot might depend on the circumstance of its being collected before or after the cutting of the parent crop, obtained a quantity gathered before, and after the harvest. He sent the separate products to the minister of public instruction at Berlin, who remitted them to Dr. Kluge for clinical trial at the Maternite of that city. The substance was employed on fifteen females, all well formed, and with natural presentations. The following are his comparative results:—1st. The action of the ergot of rye collected before harvest is very energetic, while that collected after harvest is totally powerless. 2d. In many cases the remedy renders the forceps unnecessary, especially when the insufficiency of uterine force depends either on real atony, or on a spasmodic contraction of the neck of the uterus. 3d. The ergot gath-

ered before harvest arrests uterine hæmorrhage. 4th. The dose is from thirty to sixty grains, administered in portions of ten grains every ten minutes.—*Am. Jour. from London Lancet, from the Allegemeine Medicin. Zeitung. Nov.* 10, 1832.

15. *On Ergot.*—An admirable essay on the use of ergot of rye in menorrhagia and metrorrhagia, has just been published in the *Bulletin General de Therapeutique*, by MM. Trousseau and Maisonneuve. We subjoin the conclusions they deduce from their observations, together with a tabular epitome of the cases from which they reason. These researches deserve the deep attention of all practical men.

"*Conclusions.*—From the preceding facts we deem ourselves entitled to conclude—

"1. That the ergot of rye exercises on the uterus a powerful, but transitory action.

"2. That this action chiefly concerns the fibres of the organ, and determines their contractions.

"3. That these contractions, constantly accompanied by pains, put a rapid stop to the menorrhagic discharges, on whatever cause they depend.

"4. That the state of the uterus in no respect influences theproduction of the pains.

"5. That the pains are observed even when a part of the neck of the uterus is affected with cancer.

"6. That the ergot of rye acts on the centre of the nervous system as a narcotic.

"7. That the resulting phenomena are slow but durable.

"8. That they are never serious or dangerous when we confine ourselves to combat the menorrhagia.

"9. That the dose may, without danger or inconvenience, be carried to several drachms in the course of four or five days.

"10. That in the treatment of menorrhagia, divided doses, given at equal intervals are to be preferred.

"*Lastly.* That we need be under no apprehension of commencing with a drachm dose, divided during the first twenty-four hours.

Tabular Epitome of the Principal Circumstances of the Facts contained in the Body of the Memoir.

Cases.	Age.	Number of Children or, Miscarriages.	Duration of the Disease.	Cure in	Quantity of Ergot taken
1. Menorrhagia	18	—	15 days	60 hours	216 gr.
2. Ditto.	23	—	6 weeks	7 ditto	108
3. Ditto.	30	—	15 days	44 ditto	168
4. Ditto.	39	—	1 month	¼ hour	108*
5. Ditto.	41	—	ditto	6 hours	204
6. Ditto.	28	1	9 days	18 ditto	192
7. Ditto.	23	2	1 month	3 days	240
8. Ditto.	32	3	9 days	4 ditto	132
9. Metrorrhagia	36	2	8 days	24 hours	180
10. Ditto.	30	5	6 hours	½ hour	51
11. Ditto.	30	Several	7 days	10 days	192
12. Ditto.	35	10	4 days	5 days	288
13. Carc. uteri	49	—	36 hours	36 hours	120

Am. Jour. from Lancet, March 30, 1833.

16. ***Chemical Analysis of Ergot.***—In 103 parts of Ergot, Mr. Wiggers, of Berlin, has found—

White oil matter	35.0006
Solid fatty matter, crystallizable, and of peculiar nature	1.0456
Cerine	0.7578
Fungous matter	46.0862
Ergotine	1.2466
Vegetable ozmazome	7.7645
Sugar	1.5530
Gummy extract, with red coloring principle	2.3250
Vegetable albumen	1.4800
Acid phosphate of potash	4.4221
Phosphate of lime, and traces of iron	0.2822
Silica	0.1394
	102.0930

There are some remarkable points in the preceding analysis. In the first place, the presence of vegetable ozmazome identifies the ergot with the class of mushrooms in which this substance forms a considerable proportion. In this ozmazome seems to reside the power which promotes parturition. The ergotine is insoluble in water, and seems, from the experiments of M. Wiggers, to be the principle in which the poisonous qualities of the ergot resides. On several animals it has operated as a powerful irritant poison, while the ozmazome

*"In this case the discharge ceased in a quarter of an hour after the administration of the first dose 48 grains; the administration of the ergot was, however, continued until the third day."

produced no such effect.—*Am. Jour. from Lancet, from Alleg. Med. Zeit.* 10 *Nov.* 1832.

17. *Anthelmintic Emulsion.*—"Turpentine is now regarded as the most certain of our medicines for the expulsion of intestinal worms: it has been exhibited under a great diversity of forms, with a view chiefly to the modification of its nauseousness, or the increase of its specific powers: as combined in the subjoined prescription, it acts with remarkable efficiency:—℞. Infusi Sennæ, f. ʒx.; Syrupi Rhamni, f. ʒj.; Confectionis Scammoniæ, ℈ij.; Copaibæ, ♏xxx.; Olei Terebinthinæ Rectificati, f. ʒi.—Ritè misceantur ut fiat emulsio, quæ horâ matutinâ sumatur.

"This the dose for an *adult*, having no contra-indicative symptoms: the patient should take it in bed, about four or five o'clock in the morning, and afterwards endeavor to sleep. Generally, within four hours, the medicine begins to determine cathartic effects: if these do not then commence, a small tea-spoonful of the confection of scammony, or half an ounce of castor oil, will induce alvine evacuations; after each of these, some drops of an essential oil, or of the aromatic spirit of ammonia, or a little brandy in water, will counteract the tendency to squeamishness and exhaustion which the terebinthinate medicines usually produce. In cases where invermination is indicated by general symptoms, though worms have not been discovered in the patient's dejections, this medicine often accomplishes the dislodgment of these reptiles and a removal of the disorder which their presence had occasioned: in all other cases, the results of its administration are invariable and salutary. For the destruction of tæniæ, the emulsion should be exhibited at least four times, at moderate intervals; its repetition, within a fortnight, seldom fails of eradicating the other kinds of parasitic animals by which the alvine canal is infected. The use of this vermifuge, should be accompanied and followed by a course of medication with bitters, iron, and mild resinous aperients with aromatics."—*Am. Jour. from Med. Chir. Rev. July*, 1832.

18. *On Infantile Convulsions. By Professor Graves, of Dublin. Extract from a Clinical Lecture.*—When we consider the convulsive affections of the infantile period, we find that they may arise from a variety of causes. In the first place, they may be produced by the process of dentition. Some persons seem to think this impossible: but it is not only possible, but true; for teething is capable of exciting a very great degree of irritation in the system. We also observe that an irritable state of the brain, accompanied by a hydrocephalic tendency, will produce convulsions; but in very many instances, particularly in children of the ages mentioned above, they proceed from intestinal irritation. Of those forms which spring from the irritation of dentition, or of cerebral excitement, I do not intend to speak, as, on these matters, the standard medical works furnish abundant information. I shall restrict myself, therefore, to some observations on those convvlsions which depend on intestinal irritation. As such convul-

sions frequently arise from causes which affect digestion, and produce a change in the mode of nutrition, they appear very soon after birth. The animal, which but a short time before was nourished by the placenta, is now supported by ingesta; and hence, from this sudden change, if there be any source of irritation existing in the system of the child, or in the nature of its food, an unhealthy state of bowels rapidly ensues. To the consequences of this affection, manifesting itself so soon after birth, nurses have given the name of *nine-day convulsions.* Again, when another change is made, and the nurse's milk is left off, children are also liable to convulsive fits, and these are the convulsions of ablactation. In fact, at any period during the first year, infants are very apt to get convulsions, from various causes. If the mother uses an improper kind of food or drink, or gets into a bad state of health, or be strongly affected by mental emotion, the quality of the milk will be suddenly changed.* Under all these circumstances, or if the child be over-fed, (a very common fault,) the bowels get out of order, the whole intestinal canal is thrown into a state of irritation, and convulsive fits succeed.

It is necessary to be more explicit on this subject. When you are called to treat a case of infantile convulsions, bear in mind that they very frequently arise, particularly during the first six months, from the cause before mentioned, and this should, therefore, claim, at once your attentive consideration. I remember the time when it was the common practice to treat every case of convulsions as if it were an hydrocephaltic attack, and when antiphlogistics, calomel, and cutaneous irritation, were the indiscriminate means employed in combating every form of this disease. If a child happened to get a convulsive fit, it was immediately said, here is inflammation or congestion of the brain; and leeches were applied in successive relays, calomel given in large doses, egg-shells, crabs' eyes, magnesia, and other absorbents administered, and the unfortunate infants cruelly tortured by the repeated application of blisters to the scalp. I have seen cases where this blistering was carried to such an extent, that the child had not a place to rest its head upon. It is to Dr. Gooch we owe the valuable discovery, that there is in children a state of heaviness of head and torpor, accompanied by a tendency to convulsions, in which depletion cannot be employed, and where narcotics and even stimulants may be used with advantage. Dr. Locock asserts, that convulsions of this nature may be recognised by the depressed state of the fontanelle, an assertion which I have not yet verified. With respect to leeching, I have to remark, that a single leech to an infant is equal to a bleeding in an adult; and yet how often have we seen children leeched and leeched, until, becoming pale and exsanguineous, they sink as much from loss of blood as from the effects of disease.

With respect to the causes and periods of indigestion in children,

*** It has been lately proved, that the custom adopted by some, of keeping the child at the breast for a year or a year and a half, is both unnatural and injurious. Every child should be weaned when nine months old.**

I have already spoken. There is one point more which I wish you to hold in memory. Milk is a compound fluid, a beautiful emulsion furnished by the hands of nature, in which sugar, oil, and curd, are blended with a certain proportion of water. Now, when a compound fluid, such as milk, enters the stomach, and is submitted to the process of digestion, those parts which are soluble in water are absorbed, and those which are not, become first coagulated, and afterwards undergo resolution in the gastric juice. Thus, while the water and sugar are absorbed, the curd of the milk is separated from it by coagulation, and forms a solid substance, which is acted on by the stomach, and becomes dissolved by the agency of the gastric juice, and in this way contributes to nutrition. Not a particle of the milk, however, ought to enter the duodenum until it has passed through the usual process of digestion. As the first step to the accomplishment of this is the coagulation of the curd, this occurrence takes place with extraordinary rapidity: and it is a sign of health if the milk be thrown up in this state immediately after it has been sucked. The rennets of young animals give striking evidence of this power. But if it should happen that the stomach does not act properly, and the curd remains undissolved, what is the consequence? The curd passes into the alimentary canal in a condition different from that in which nature intended it should, and consequently produces intestinal irritation. None of the purgatives given to children are attended by half so much griping as this substance. This explains the phenomena which, in such cases, present themselves to our observation. The child becomes griped, irritable, and feverish, his tongue is loaded and white, he gets restless, and now and then utters a shrill scream. In this way the disease may go on for a considerable time; as the child is dropping asleep, he starts suddenly and screams out, bends himself in the form of an arch, and throws his head back as in opisthotonos. I have seen children in this state for a week. The physician, or nurse, gives castor oil, or some other purgative, and a great quantity of the curds are passed, and surprise the child's relatives. On examining the discharge, you find it consisting of lumps of different sizes, colored imperfectly with bile, and having a burnt appearance; on breaking them up, you perceive them to be white internally, and consisting of indigested curd. You remove these by purgative medicine, and the child gets well. Now, we all can do this; it is clearly laid down in books: you are told to examine the egesta, and give purging medicine where it is necessary. But there is one fact which has not been noticed. When you have treated the child in this way, and the attack has been cured, if the child be very strong, when put to the breast again, he may go on well, and you have no futher trouble, but if he is weakly, or of an irritable habit, when he is brought back to the suck again, or spoon-fed with milk, the same process of imperfect digestion takes place, and he gets another fit. The physician is again called in, and repeats the purgative, and the child gets better a second time; and, in this way, the physician goes on giving medicine, and the mother giving milk, and every body wonders at seeing what a quantity of foul stuff passes from the bowels. How are you to avoid this? By making

infant abstain from milk in any shape for twenty-four hours, sometimes for the space of two, or even three days. It is incredible how small a portion of milk, even in the most diluted state, will keep up this disease, acting like a species of poison on the intestinal mucous surface. You know, that animal poisons, such as variolous, or vaccine virus, will affect the system, even when applied in a state of extreme dilution, and you can therefore conceive, that a small portion of milk will operate in this manner. I attended a case of this disease some time ago; the child had a relapse, and, on being called in again, I asked the mother whether she had given it any milk, and she told me scarcely any. I am always suspicious where I hear the word *scarcely* used; and, on requesting to see the kind of food she had been administering, she handed me a bowl of barley water, with the usual proportion of milk and sugar in it: it is in this way that we see the disease prolonged week after week by the prejudices of the nurse and the ignorance of the physician. Well, if you forbid milk altogether, what will you give the child? Let him have chicken broth, barley water, thin panado, veal broth, or whey. How long are you to continue this? The number of days will depend on the power which the child possesses of regaining the proper tone of the stomach; some children will have the stomach out of order to-day and well to-morrow, and the length of time you are to keep up this diet will vary considerably. When you are called, therefore, to a case of convulsions, inquire into the history of its symptoms, the nature of the alvine evacuations, and the quality and quantity of your patient's food; and if you find that, before the attack, the child's bowels have been in a bad state, that they have been for some weeks inclined to be loose, or that the stools are, at the time, similar in color and consistence to what I have described, (though, by the by, you are often told that every thing is quite right when it is not the case,) you will then be able to judge properly of the nature of the case, and, by giving aperient medicines, you will probably not only cure the disease, but also prevent a return of the convulsions. Sometimes, however, the convulsive fits will remain after the irritating sordes have been removed by purgative medicines. Absorbents are next made trial of. These have a very beneficial influence in many cases, they can do no harm, and where acid is present, (and this occurs in the stomachs of children to a greater extent than in those of adults,) prove mildly purgative. But if the convulsions continue, what else will you prescribe? I remember attending, not long since, an infant, about three or four months old, who had been for some time under treatment for convulsions. Leeches had been applied to the epigastrium; it got calomel, castor oil, and hydrargyrum cum creta, absorbents, aperient and fœtid enemata, and blisters to the vertex and stomach. Still the convulsions went on. Well, what did I do? I prescribed the following mixture,—℞. Spirit. terebinth. ʒj.; olei ricini, ʒiv.; syrupi papaveris albi.; mucilaginis g. Arabici, aquæ fœniculi, ā ā. ʒij. Of this mixture, when well shaken, exactly ʒj. was to be given every third hour; and what was the result? It operated on the bowels, and produced a copious dis-

charge of urine, a marked improvement took place, and towards evening the convulsions entirely ceased.

My friend, Dr. Brereton, has, in similar cases, after the bowels were evacuated, succeeded in preventing a recurrence of the convulsions by means of the following mixture, suited to a child six months old:—℞. Olei anisi, gt. iv.; Sacchari albi, gr. x.; intimé misceantur et adde Aquæ fontis, ʒij.; Pulv. rhei, gr. x.; Carbonat. magnesiæ, ϑj.; Tincturæ opii, gt. iv.; Spirit. ammoniæ fœtid. gt. x. Sumat cochleare j. medium, tertia q. q. horâ.

It is to be observed, that much caution is necessary in giving such combinations containing opium to infants, but there is a period when depletion ceases to be useful, that a mixture like this will prove the most effectual means of curing convulsions. In such cases of convulsions, in addition to the use of purgative medicine, prescribing the mother's milk, and giving spirit of turpentine, you may, during the first twenty-four hours, while the child is strong, order a warm bath, applying, at the same time, a sponge dipped in cold water to the head; or, if the child be weak, incline its head over the side of the cradle, and use the cold sponge and you will find that it will diminish the fit.—*American Journal, from Lond. Med. and Surg. Journ. January* 26, 1833.

18. *On the Employment of the Chloride of Lime in the Treatment of Psora.*—Professor Fantonetti, of the University of Pavia, has lately published a statement of the happy results obtained by himself, both in private and public practice, from the application of the chloride of lime in the treatment of psora. The Professor has treated eight cases of itch, all of which were received into the Hospital of Pavia, about the same period with this remedy. Out of this number, five were cured in from six to eight days from the commencement of the treatment, and the rest in a few days more.

The manner of using it, is to prepare a lotion, composed in adult cases of from one ounce to an ounce and a half of the chloride, to a pint of common water, and in children, of one ounce of the chloride to the same quantity of water, with which the parts affected are to be washed three or four times a day. Every third day the patient should take a warm bath, for the double purpose of cleansing the surface of the body, and washing off the crust of carb. lime, which may adhere to it. The warm bath moreover, tends to sooth the irritation, which this remedy sometimes occasions, as when the quantity of the chloride has been too great in proportion to the water, or its application too frequently repeated, or when the skin itself was originally in a state of irritation.

Professor Fantonetti assures us, that in almost every case of psora treated in this way, a cure is effected in eight days time from the commencement of the treatment, and he recommends it to the profession as the most certain, the most prompt, and at the same time the most economical of all the remedies with which this disease may be treated. These results of Mr. F. should particularly attract the attention of the

profession, since similar ones had previously been obtained in France by the exhibition of this article. M. Derheins, an apothecary, residing at Saint-Omer, published in 1827 a paper on this subject: and to him, therefore, is due any credit that may be attached to the introduction of this remedy into practice; upon the utility of which our professional brethren will have to decide. M. Derheins, as well as M. Fantonetti, assures us, that he has cured some of the most inveterate cases of the disease, with it alone, after they had resisted a host of other remedies. He employed a lotion consisting of three ounces of the chloride to a pint of water, with which the diseased parts were washed three or four times a day. The average period necessary to effect a cure in his hands, varied from six to ten days. He had however remarked, that the cure was more prompt when, instead of the common solution of the chloride in water, he employed a liquid chloride, obtained by passing a stream of chlorine gas through a mixture of lime in water, until the gas was in excess. We should, moreover remark, that the statements given above are supported by the following facts. In 1810, the Spanish prisoners who were crowded together in large numbers at Flessingue, were attacked by fevers of a very fatal character, which soon thinned the ranks of these unfortunate beings, the most of whom at the time labored under the itch. Water impregnated with chlorine was used in order to diminish the contagious tendency of the fevers, and M. Cluzel, the apothecary, observed that all those individuals affected with psora who washed their hands in the chlorated liquid, were very much benefited by it, and more than one attributed their cure of this disease to the employment of this simple remedy alone. However this may be, it is certainly an interesting fact, that in repeating the experiment of M. Derheins, which were published M. Chevallier in his treatise on the chlorides, that M. Fantonetti met with similar beneficial results. The observations which have been made upon this article, should induce the profession to set the point relative to its great efficacy at rest, by at once repeating the experiments of MM. Derheins and Fantonetti. If the cure be as prompt as they state it to be, the introduction of the remedy will certainly prove one of the most important improvements in the treatment of this disease; for, according to Melier, the average period required by every other method of treatment employed in psora to effect a cure, is twenty days. The odour of the chloride of lime is by no means so disagreeable as that of sulphur, (the remedy usually resorted to,) nor does it stain every thing with which it comes in contact, as the latter article, which is almost always combined with some fatty substance, does. If, therefore, it proves as successful in effecting a cure as the sulphur has, it certainly should be preferred to this article in practice. —*Am. Journ. from Bulletin de Thérapeutique.*

19. *Chronic Bronchitis.*—Professor GRAVES has been treating a case of this, in which he suspected dilatation of the bronchial tubes, with an emetic every day, after the plan recommended by Dr. Fothergill, and lately by Dr. Elliotson.—"In cases like this," says Professor G., "there is a great quantity of mucus in the bronchial tubes, the

lung becomes loaded and respiration oppressed, and the best thing you can do is to give an emetic, which produces the most beneficial effect on respiration. That the emetic may not interfere with the man's digestion, I give it in the morning, about four or five o'clock, when he awakes. Such persons are generally awakened at an early hour by the cough, which is brought on by the quantity of mucus accumulated during sleep, and continue to cough for three or four hours with great distress. This is the time when an emetic is given with the best effects; it unloads the lungs, shortens the fit of coughing, and gives very speedy relief, at the same time that it does not interfere with the patient's meals, for the stomach will be quite well before breakfast."—*Am. Journal, from Lond. Med. and Surg. Journal. April,* 1833.

20. *Method of Applying Nitrate of Silver to Ulcers of the Cornea.*—A very ingenious method of preparing nitrate of silver for application to ulcers of the cornea, is described in the *Bulletin de Thérapeutique.* This consists in heating an inch of the extremity of a silver probe, and then lightly rubbing it on a stick of lunar caustic. The salt is immediately melted, and unites with the metallic surface, coating it with a thin layer of caustic; if too thin the process is to be repeated. When the instrument cools it must be wiped clean.—*Am. Journal.*

21. *Chloride of Soda in Burns, Scalds, and Black-Eyes.*—Mr. Holt recommended at a meeting of the Westminster Medical Society, the chloride of soda as the best application he is acquainted with in the cases just enumerated. Mr. H. stated that he was called to a child that had pulled a saucepan of boiling water over its face and chest, on Monday, by which the whole of the cuticle was destroyed, He had four ounces of the solution of chlorine and water made up and applied, and subsequently chlorine mixed with unguentum cetacei spread on the parts. The result was, that by the following Saturday, the injured part was perfectly well, while a small portion on the back, treated by other means, was unhealed for a fortnight. He particularly recommended the use of the chlorine where vesication had not yet taken place; and pledged his veracity, that if applied immediately after a scald had occurred, not the slightest scar would remain. Where the skin was broken, it was his custom to make the lotion of four ounces to a pint of water, and the ointment of a consistence not quite so thin as cream. Amongst other cases he cited was one of a solicitor, whose hands were much blistered in putting out the flames of his bed-curtains, fired by his servant. He (Mr. Holt) sent a couple of quarts of the lotion to this gentleman, had it poured into soup plates, wrapped his hands in lint, as no skin was broken, placed them in the plates, and kept them there some time, and the next morning his hands were so perfectly well, that only one small dried patch of burn existed; and he was not out of his office an hour in consequence of the injury. An hour and a half had elapsed before the application. For the first few min-

utes the remedy increases the pain, but after that it produces ease. He would also state, that he knew of nothing so efficacious in a "black-eye" as the application of a solution of chlorine. It would disperse the awkward effects of a blow in that direction, almost like a charm.*—*Am. Journ. from Lancet, April* 6, 1833.

22. *Prolapsus Ani. Extract from a Clinical Lecture by Baron Dupuytren.*—Prolapsus ani consists of an eversion of the inner membrane of the rectum, which, forming a kind of invagination, descends within itself, and at length projects beyond the sphincter to the extent of two, three, four, five, or even six inches. Usually the intestine comes out every time the patient goes to stool; in other cases it descends only when the patient has remained in the standing posture for a long period; while, in other cases, the gut may become everted at any time, which shows that the relaxation is carried to a great extent, and that prolapsus takes place without any effort on the part of the person affected. In general the gut is easily returned; but sometimes the sphincter ani produces such a degree of strangulation, that the projecting membrane becomes at first dark-red, then black, and at length falls into a state of gangrene. Should you happen to see such a case of strangulation as I have described, you are to endeavour to reduce the gut in the following manner:—The patient must lie on the abdomen, and the pelvus must be raised conveniently by pillows placed between the thighs; some pledgets of wet lint are then to be placed round the base of the tumour, and gentle pressure exercised in order to reduce its volume. After this a compress should be placed on the centre of the orifice of the intestine, which is to be returned by gentle pressure into the abdomen. When reduction by this means is altogether impossible, we may be compelled to have recourse to scarification of the gut, but as the employment of cutting instruments may be attended by ulceration or inflammation of the large intestines, they are to be avoided as much as possible. The same observation is applicable to the use of leeches, which may be followed by external or internal hæmorrhage, ulceration, &c.

"But, though the reduction be accomplished, we have still to combat the tendency to prolapsus, which depends on the weakened action of the sphincters, or perhaps on certain causes producing strong contraction of the muscular fibres, inverting the large intestines, such as chronic inflammation. In the latter case, our first care will be to combat the inflammatory action, which gives rise to the disease; but when the prolapsus depends on a want of action in the sphincter ani, the best method of cure is that which has for its object the diminution of the cutaneous and mucous parts which surround the anus. The practical question to consider is, how can we best assist the action of the sphincters? Cold baths alone are frequently sufficient for this purpose; but the remedy is tedious, expensive, and requires

*In some of the northern counties of England, the working men treat a black-eye very beneficially. by sucking with the mouth, for a short period, behind the bruised man's ear.

constant attention. A better mode consists in removing some of the folds of skin, which surround the margin of the anus, so as to diminish the extent of the soft parts which dilate when the patients goes to stool, and to determine adhesion between the skin and neighboring parts. When the patient is placed in a convenient posture, the operator, holding in his hand a common forceps, (with the points rather blunt, so as not to pinch the skin,) seizes successively several of the folds of skin which surround the margin of the anus in a radiated manner, and with a scissors curved upon its flat side, he excise several of these folds as far as the margin of the anus, or even two or three lines further; if the prolapsus be considerable, and of long standing, it will be necessary to extend the excision an inch within the anus the sphincter ani must not be touched, as the operation concerns only the external tissues."

M. Dupuytren has never seen any hæmorrhage or unpleasant circumstance accompany this. The pain of the operation instantly occasions a strong contraction of the sphincter ani, and the inflammation extends for a slight way to the neighboring tissues. Usually there is no stool for the first few days after the operation. About the eighth day the inflammation begins to subside, but the excretion of facal matter continues to produce pain and violent contraction of the sphincter ani. M. Dupuytren has never seen the prolapsus reoccur after the operation.

At the conclusion of the lecture, the Baron proceeded to operate in the manner he had described, upon a young child of three years and six months old. The gut projected about three inches beyond the margin of the anus, and came down every time the boy went to stool. M Dupuytren having returned the projecting bowel, nipped off with the scissors four or five bridles of the skin round the margin of the anus. The little patient lay perfectly quiet, and seemed to suffer so little pain, that immediately on getting up he offered to the Baron an orange, which he had received to keep him quiet, and pronounced his "adieu" with an undisturbed voice.

4. The boy lively, and seeming to suffer little or no pain. A plug has been placed on the anus, and supported by a bandage. No stool since the operation.

5. The little patient seems to suffer some pain to-day when he moves, but is otherwise quite well: has passed two stools since the last visit. The gut has not descended, or even approached the margin of the anus.

7. No descent of the gut; goes to stool regularly, but seems to suffer some pain.

11. The uneasiness has gradually diminished; no accident of any kind has occurred, and the boy was dismissed to-day apparently perfectly cured.

29. To-day the boy was brought by his mother to be examined at the hospital. There had been no return of the prolapsus, or appearance of the internal membrane at the anus, although for the last few days the child had been affected by a diarrhœa, which compelled him

to go frequently to stool, and occasioned much straining.—*Am. Journ. from Lancet, April* 27, 1833.

23. *On the use of Cold Water in Cholera. By Dr. Hardwicke Shute, of Gloucester.* (*In a letter to the Central Board of Health.*)—My attention was early directed to the fact, that no good, or rather as it appears to me most decided injury was done by the administration of brandy, (or alcohol in any of its multifarious forms,) and even by the use of the stimulant emetics, when they were retained, as frequently happened in the advanced stages of collapse. In endeavouring to account for the deaths which commonly occurred in the course of a few hours, I was forcibly struck with the marked analogy which exists, as far as the state of the pulse and diminished animal heat are concerned, between the collapse of cholera and the impaired vital energy which results from starvation or long-continued exposure to excessive cold. Now it is an established fact in therapeutics, that the administering of a stimulus, disproportioned in strength or extent to the impaired vital energy of the system, is, under such circumstances certain death; and that mortification of a frost-bitten extremity uniformly results from the hasty application of too great a degree of heat, or other stimulant, to the affected part. The treatment which I have adopted in the second and third stages of cholera is founded on the analogy already mentioned, and on the general principle that the necessity of diminishing or absolutely withdrawing every kind of stimulus is greater in proportion to the degree of collapse, or sinking of the vital powers.

The circumstance which particularly directed me to the remedy I employ, was the thirst, the excessive and inordinate desire on the part of the patient for water, for cold water more particularly, and I may almost say cold water exclusively; all other liquids being taken with reluctance, if not absolutely refused. I shall therefore state in general terms, that the free and unrestrained allowance of cold water, which, in the most marked cases of recovery, was taken to the extent of some gallons in a few hours, is the circumstance to which I wish particularly to direct your attention. If I add to this the abstraction of all kinds of stimulant remedies, both external and internal, even to the exclusion of friction, or the application of heat in any form, I have stated in general terms the whole plan of treatment, which, as I shall show, has succeeded in twelve out of fourteen, if not in twelve consecutive cases of the third stage of cholera. I am fully aware that the number of cases is too few to justify any thing like a general conclusion; but you will, I think, agree with me that they are not too few to justify a more extensive trial of the plan proposed. And it is with this view that I now address you; hoping that through your influence such trial will be made on a more extensive scale than is in the power of an individual.—I shall now mention some particulars which appear to me calculated to throw additional light on the plan of treatment I propose, it being understood that my observations apply to the *second* and *third*, particularly to the *third* stage of cholera

"when the pulse at the wrist has ceased, or become almost imperceptible."

The windows of the cholera hospital in Gloucester are large and numerous in proportion to the size of the apartments, and are open night and day. The doors open immediately into the garden, and are not suffered to be closed, so that the patients may be considered as living in the open air. I may add that the fires are purposely kept so low as to influence as little as possible the temperature of the room. The covering of the patients is confined to a light blanket and rug; and it seldom happens that some part of the body, particularly the breast and shoulders, is not constantly exposed. Under these circumstances, a pint of cold water is offered to the patient, and very frequently two-thirds of this is taken at a draught. In what I consider the most favorable cases, vomiting is almost immediately produced, and the patient in two or three minutes again calls for and eagerly drinks the same quantity with the same result. This is often continued for hours, until gallons of water have been taken, and the greatest proportion, (but I conceive not all,) rejected by vomiting. In other cases the patient is too insensible to ask for the water; and under these circumstances, it is offered every ten minutes or quarter of an hour, and most commonly drank with avidity. If gruel or tea be offered, the patient most frequently refuses it, and generally speaking no kind of nutriment is taken in any form until the period of convalescence. I consider it of great consequence that the vital powers should be restored as gradually as possible; and it is of importance to remark that the progress towards recovery has been in all cases remarkably gradual and uniform. In the first six or eight hours no amendment can be observed except some diminution in the purple hue of the extremities; in the next six or eight hours there is a manifest improvement in the countenance of the patient, and more disposition to sleep, but often no restoration of the pulse or increase of temperature. In some cases the pulse has not been perceptible for twenty-four or thirty-six hours. From this period the pulse, the animal heat, and the secretions are very gradually restored, and at the end of forty-eight hours, or the third day from the commencement of the treatmeut proposed, the patient is convalescent, and in all cases without consecutive fever. I mention these circumstances particularly, in order that the practitioner may not become impatient. He should, inmy opinion, be satisfied, and make not the least alteration in the plan proposed as long as the patient is merely not getting worse.

It would be inconsistent with the professed object of this memorial to offer any remarks upon the pathology of cholera, or upon the *modus operandi* of the treatment here recommended. But I cannot refrain from briefly suggesting, first, the importance of knowing;—that in the collapsed stage of cholera, cold may be extensively applied to the coats of the stomach without diminution, to use the most cautious term, of the vital energy. Secondly, that cold so applied has a manifest tendency to check the serous secretion, or perhaps, more correctly speaking, excretion or exudation of serum, which characterizes the disease. Thirdly, the acknowledged effect of vomiting in checking

diarrhœa, equalizing the circulation, and emptying the vessels of the liver, and consequently the importance of not checking a natural action which has a conservative tendency. Fourthly, the probable effect of the liquid absorbed by the stomach in restoring the fluidity of the blood; and the presumption that the saline treatment, both as applied to the stomach and by its use in venous injection, may owe its effect as much, probably more, to the fluid itself, than to the ingredients it contains. Fifthly, the great importance of the arterial circulation being restored as gradually as possible, and the fact of convalescence taking place without the consecutive fever, which so often proves fatal in the *fourth* stage—the stage of reaction.

This method of treatment I have used with success in twelve of fourteen cases, and I may say in twelve consecutive cases. The first case in which it was tried and proved successful, occurred about six weeks ago, soon after the first appearance of the disease in this city. In the four first cases of the disease which came under my notice, internal and external stimulants were liberally administered. The mustard emetic and bleeding were also had recourse to, and every patient died in less than twelve, one in six hours. I determined therefore, (having understood from my professional brethren that the saline treatment had equally failed,) to take the first opportunity of watching the disease uninfluenced by remedies, with the hope that I might thus ascertain, if possible, the natural effects of the constitution, if any, to relieve the disease. In the cases already mentioned, I had observed that the stimulants were taken with great reluctance, and in one instance of extreme collapse, when the patient was apparently unconscious of every thing, I was much struck by an earnestly-expressed desire, that no fire should be made in the room, directions to that effect having been given in her hearing. In two of these cases the thirst was, I observed, excessive, and very distressing to the patient.

Soon after this, I was requested by a medical gentleman of this city to visit a female, fifteen years of age, whose father was at that time lying in the house dead of cholera. It was a marked case of collapse, with constant vomiting and purging of a fluid like rice-water. The pulse at that time, about one o'clock P. M. was scarcely perceptible. Calomel and opium had been previously given. I recommended a very liberal dose of opium, with various stimulant antispasmodics and olive-oil, and visited the patient again at seven o'clock that evening. The symptoms at that time were much aggravated—the vomiting and purging not at all relieved—the pulse imperceptible—expression of countenance cadaverous in the extreme. In despair, I recommended ten grains of musk to be given every hour, to the extent of two scruples; and left the patient with the impression, which was also that of the other medical gentleman in attendance who was with me, that she could not survive many hours. Having reflected upon the case and still feeling anxious that relief, if possible, should be given, I returned in an hour with some green tea, and desired some to be made very strong and given. Whilst this was in preparation I visited the patient, and to relieve the thirst, which was excessive, presented a pint of cold water, the greater part of which was eagerly

swallowed, and in less than a minute the whole was apparently rejected by vomiting. At this time I may observe, the symptoms were the same as last described. In two or three minutes after she *asked* for the water, which was drank, and immediately rejected as before. Having witnessed the continued repetition of the process for half an hour (during which time the tea had been offered, and refused as soon as tasted,) without any increase of collapse, and with the satisfactory circumstance of a change in the voice, which had been highly characteristic of the disease, I left directions that cold water should be given to any extent which the patient might desire. I was informed the next morning that the patient had taken some gallons of water; had been constantly sick after each draught; but had not been sick, or asked for water the last hour. I also ascertained that the window, which opened immediately upon the bed, had not been closed the whole night. At this time there was no perceptible pulse or increase of temperature, but the countenance was, I thought, not quite so cadaverous in expression. The same plan was continued.—In the middle of the day there was still no manifest improvement, but in the evening the pulse was perceptible. The next morning the pulse was decidedly improved, and on the following day the patient was convalescent, without any appearance of fever. If I have been tediously minute in the history of this case, I trust that it will be attributed to the great interest I must naturally feel in a case which terminated so satisfactorily, and which was the foundation of my future practice.

Soon after this, I was told by another medical gentleman that he was in despair, having lost seven cases of cholera in succession, and had just visited another, who, he supposed would be dead before night; and that he had done nothing but ordered small doses of capsicum, with camphor mixture. I found this patient in a similar state to the last—recommended the unrestrained allowance of cold water—heard she was better the next day, and found her convalescent the following day, but with indications of fever. This circumstance, however, was accounted for by the fact that beer and cider, as well as cold water, having, through the prejudice of the attendant, been frequently given.

My experience, subsequent to the cases mentioned, has been confined to the Cholera Hospital in Gloucester, which was opened a fortnight ago, and placed under my superintendance, with the assistance of a resident surgeon. The first four cases sent to the hospital which was then under my care, were all dead next morning. Since that period, of the forty-eight cases admitted, twenty-one have been discharged cured; eight I consider convalescent: eight are under treatment; and eleven have died. Of the eleven deaths, two might fairly be attributed to previous treatment, or other circumstances; three were in progress towards recovery, and relapsed from improper exertions on the part of the patients; two which were under three years of age, died under symptoms of cerebral congestion, after the pulse had been restored; one was more than sixty years of age, another about fifty, and extremely emaciated from previous disease or starvation; in one,

the case was too advanced to admit of the plan being tried; and in another the patient was a notorious drunkard, and died a few hours after admission, with a gin bottle concealed about her person. If due consideration be given to these circumstances, the deaths cannot, I think, throw any discredit on the practice. I may add, that in all the cases great allowance must be made for the effects of previous treatment, as being most commonly directly opposite to my views of the disease. My experience hitherto justifies, in my opinion, the following conclusions, viz:—That in all cases the progress towards death is retarded by the water treatment; that when the irritability of the stomach is excessive or unimpaired, reaction will be established in a very great proportion of the cases; and that when the natural powers of the constitution are not unusually weak from extremes of age or other causes, such reaction will be followed by an early convalescence.—Any suggestion from those who are much more conversant with the disease than myself, will be received with gratitude, and any question answered to the utmost of my ability.—*Am. Journ. from the Edin. Med. and Surg. Journ. October*, 1832.

24. *On the Use of Ice and Chloride of Soda in Cynanche Maligna. By Samuel Jackson, M. D. of Northumberland, Pennsylvania.*—[*Communicated in a letter to the Editor*]—In the last number of your Journal, p. 261, you have published an extract of my letter concerning the use of ice in cynanche maligna. This letter was written in April, 1832, and since that time I have had ample opportunities of testing this remedy. In more than forty cases I have found it highly useful, and without it I am certain more than one-half would have been lost. Mrs. Magill of Danville, Baskins of Selinsgrove, and Lotz of New Berlin, have all used it with the happiest effect. So necessary has it become at the last named place, that Mr. Laschelles, a benevolent gentleman of that town, has refused to let his ice be used even in his own family, thinking proper to reserve it all for the sick.

The patient ought to hold it almost constantly in the mouth, as directed in my former letter, and swallow the solution; but if he be not old enough to rest on his guard against swallowing the undissolved lump, it may be enclosed in a gauze bag. If the fever be high he may swallow small portions of it finely powdered.

If the child be too young to manage ice, we inject the coldest solution of it into the throat very frequently; and in these cases pounded ice may be swallowed if there is much fever.

I have often thought of using it externally, but somehow the only favorable opportunities of trying this mothod have been suffered to escape unimproved—"Occasio celeris, experimentum lubicrum, judicium difficile," says the reputed father of physic, and as the disease has passed over us, I refer the experiment to others.

If you or your friends should try the ice, let me assure you that much will depend upon the incessant use of it night and day, till the inflammation has evidently yielded. Till this time the patient can take very little rest unless it be a mild case that may not require this uninterrupted repression and sedation. But in bad cases we must not

suffer the disease to gain upon us during the night what it has lost under the use of ice the preceding day.

Every case of cynanche tonsillaris, or simple inflammatory sore throat which has fallen under our care for the last twelve months, has been treated with ice after bleeding, and with great advantage. And in one case of most severe aphthous sore throat, which attended a low bilious fever, that of Dr. Robbins, of Sunbury, he assured me it was the pleasantest thing he had ever experienced, and I may fairly add—the most useful. But even the comfort which this remedy brings, is not to pass unnoticed. Mr. Greenough's daughter, eight years old, was delirious in the cynanche maligna for many days, and the ice could not be used. During all this time, four days and nights, she swallowed not one tea-spoonful of any thing whatever, but was incessantly employed during all this time, unless when she might dose for a few minutes in washing out her mouth with ice water, and to this must be attributed her safety.

Chloride of soda is another most noble remedy in this wayward disease. We have begun the use of it as soon as the cineritious specks appear, if at the same time there be general prostration; but if the gangrenous process is slow, and there is abundant vivacity in the system, it may be omitted altogether, and the ice continued. The sloughs will gradually and surprisingly disappear as the general inflammation of the fauces abates.

When the gangrene is considerable, and the inflammation is at the same time diffused, we use the ice and chloride alternately. But when the system is sinking, and we have reason to suppose that collapse is at hand, the ice must be omitted and the chloride used very strong.

With respect to the strength of our medicine, we are at some loss.—Such as we have received from Philadelphia, we have used with from one part water to ten, according to the age of the patient and the state of the disease; but we are by no means satisfied with our experience on this subject.

In order to purify the stomach we have given in the advanced stage of the disease, large doses of calcined charcoal, such as a drachm three or four times a day to a child ten years old.

We have bled freely in some cases, given calomel purges, poured abundance of cold water on the head when there was delirium, and sometimes have put the feet into warm water, while cold was applied to the head. We believe that many who are lost in this disease perish of inflammation of the brain; hence we suppose that cups to the back of the neck would prove highly beneficial. Leeches to the throat, we are aware, have been used, but they cannot be generally attended to in the country. All these remedies are in trial among my medical friends, and when they shall have made their report, I will give you a more full account of our methods and their success, for the use of your Journal. Meanwhile, I hope that you will try these medicines, if an opportunity should offer, for I can assure you, that I have not lost one single patient of all whom I have myself exclusively attended. I began the ice with my first patient, my own child, and I have used it in nearly all the rest. A robust boy, four years old, son of William Ze-

clif, died, to the surprise of his friends, and without medical aid; I was soon called to the rest of the family, four miles in the country, where I found the mother, her sister, and three children, the youngest three months old, all very ill of the disease. Here was certainly a mortal disease, as it had already destroyed one of the family, but all the others recovered under the use of ice and chloride of soda. Mrs. Schuyler, of this town, lost one of her children of the disease at Pennsborough, twenty-seven miles above us. Here neither ice nor the chloride was used; but when the mother returned to Northumberland, her other three children were severely attacked with the disease, and they all recovered under the use of ice, without any other application to the throat. Daniel Gossler of this town, lost two children in whose cases neither ice nor the chloride was used, though under the care of a skilful physician, and great numbers died in the country above us, while the new remedies were yet unknown.—*Am. Journal.*

25. *On the Efficacy of the Cold Dash in Nervous and Convulsive Diseases. By Charles A. Lee, M. D. of New York.*—In the last number of the American Journal of the Medical Sciences, there is mention made of the efficacy of the cold dash in convulsions of infants, particularly in cases of hydrocephalus. It is perhaps not generally known, that pouring cold water in a continued stream upon the head is one of the most effectual remedies in most cases of nervous and convulsive diseases. In hysteria, epilepsy, chorea, delirium tremens, and catalepsy, I have employed this remedy with the most decided success, as well as in convulsions of children from teething.

The following case of catalepsy I relate, not only because the disease is one of rare occurrence, but to illustrate the effects of cold when applied in the manner above-mentioned.

In January, 1831, I was called to visit a coloured girl, aged fourteen, large for her age, and who had previously enjoyed good health, with the exception of slight pains in the right hypochondrium, extending to the spine, occasioned as was believed by a burn in that region, which occurred when she was a child. Latterly she had suffered much inconvenience from it, and the day when I first saw her, she had complained more than usual. I found her in the following situation. She lay on the floor on her back in a perfectly insensible state, incapable of moving or being roused by pinching, calling aloud, shaking, or even by running pins into her flesh. She lay in the exact position in which she fell, and had not been seen to move in the slightest degree. The pulse was 100, of natural force, eyes closed, respiration easy, and the skin of usual temperature. I raised her arm to an angle of forty-five degrees with the body; it remained in that situation. I bent the forearm on the arm; it staid bent. The same occurred to her other limbs. They were easily flexed, but it required considerable force to straighten them again. The eyes were closed, and the eyelids when raised shut in a short time. How long her limbs would have remained in the position in which they were placed I know not, but they continued thus while I was in the house, which

was perhaps an hour. I noticed occasionally slight spasms in the muscles, but not sufficient to cause motion. She lay in this state fourteen hours, and then came out of it perfectly unconscious of any thing that had transpired. In about a fortnight afterwards she had another similar attack, from which she recovered in six hours. In three or four weeks from this time, she had a different attack, being violently convulsed, so that it required several persons to hold her, and prevent her injuring herself. Incurvation and recurvation of the body would alternately ensue with surprising rapidity. She foamed at the mouth, seemed unconscious of what she was doing, and sensation and voluntary motion were suspended. She had six or seven of these paroxysms, which lasted about twenty minutes each time, in the intervals lying as in the former fits. On pressure over the dorsal vertebræ she started as if it gave her pain, and moved her legs as long as the pressure was continued. She lay in this state twenty-four hours. I now directed cupping over the tender portion of the spine, and made an issue with concentrated nitric acid; this was kept discharging for several weeks, during which time she had no attack. In about a week after it healed she was again seized with a similar fit to the last, and lay *five days* perfectly insensible, without swallowing any thing. When she awaked she was but little inclined to eat, and as she had had no evacuation, digestion appears to have been in a measure suspended. The measures employed to shorten the duration of the fit appeared to have but little effect except venesection, which evidently was beneficial in several instances.

About seven months since she became pregnant, and has had three returns of the disease in that time, from which she has immediately recovered by pouring cold water in a continued stream from a considerable height upon her head. In no instance has it been longer than five minutes before she was perfectly restored. I have no doubt were it employed at the proper period it would prevent an attack; but as there is generally no warning, or *premonitory symptom*, this is impossible.—*Am. Journ.—New York, May* 18, 1833.

26. *On the Formation of Callus, and the mode of Remedying it when diseased or deformed. By Baron Dupuytren.*—There is perhaps no subject in pathological anatomy which has more exercised the sagacity of observers and the imagination of those who raise up hypotheses without experience, than the theory of the formation of callus. Two opinions have chiefly prevailed in modern times—that of Duhamel, and that of Bordenave. The former attributed to the swelling of the periosteum and medullary membrane, to their prolongation from one fragment to the other, and to their ossification, the consolidation of the fracture. He held that this re-union took place, at one time by means of a simple external ferrule, at another by means of a double ferrule, one enveloping the periphery of the fragment, the other penetrating the medullary canal, where it forms a kind of wedge, of greater or less length.

Bordenave established different principles. He admits that the union and consolidation of broken bone takes place by the same me-

chanism as the healing of soft parts: led, without doubt, to this idea by what happens when the fractured parts are exposed, he thought he could recognize the existence of cellular and vascular granulations between the fragments. According to him these granulations united and became solid by the deposition of phosphate of lime in their interior. These doctrines, more or less modified, were received down to our time, when in 1808, having undertaken to verify the ideas of Bordenave and Bichat, I was astonished to find nothing which justified them. I multiplied my researches and was led by numerous experiments to establish a theory partly founded on that of Duhamel, and which I taught in my course of pathological anatomy. Let us trace the most remarkable phenomena which we observe during the time that a fractured bone is becoming consolidated.

If the parts be examined between the first and tenth days, we find an extravasation of blood round the fragments, between them and in the medullary canal. The ecchymosis may extend to very distant parts. Inflammation and tumefaction to a considerable extent is developed at the irritated points. The fleshy fibres become confounded with the inflamed cellular tissue, and soon cease to be distinguishable from other parts. The periosteum becomes red and swollen, is softened and pours out a reddish serous fluid between it and the portions of bone which it covers. The medullary tissue becomes tumefied and inflamed, effacing by degrees the canal which the centre of the bone presents. The marrow becomes in some measure fleshy, and unites to that of the opposite side. If we examine what is going on with regard to the fragments, we find the clot which separates them to be absorbed in a few days, and replaced by a gelatinous secretion. From the fourth to the sixth day the surfaces of the fracture are covered with a reddish substance, of a downy appearance, but which is not always present. From the tenth to the twenty-fifth day the tumefaction of the soft parts becomes more solid; its adherence to the intermediate substance of the fragments appears every day more intimate; the muscles resume their wonted aspect and functions. The tumor, which I have called *tumeur du cal*, diminishes in extent, and separates from the surrounding parts; the tissue which composes it is homogeneous, like fibro-cartilage, and difficult to divide. If detached, it is found to consist of fibres parallel to the axis of the fractured bone. The swollen medullary membrane is transformed into fibro-cartilage, and progressively narrows the central cavity of the bone, till it finishes by wholly obliterating it.

In proportion as we advance in the examination of the formation of the callus, we observe other particulars: the process may go on to the twenty-fifth, fortieth, or even sixtieth day. In weakly subjects the work is not completed under three months. The lardaceous and fibrous mass which constitutes the "tumor of the callus," and which entirely envelopes the fragments, becomes by degrees cartilaginous.—Towards the end of the time, the fragments are included in the centre of solid ferrule, which adheres to them through the whole extent of the outer surface. Externally this ferrule is covered by thickened periosteum, which passes into that covering the sound portions of the

bone. The cellular tissue in the neighborhood is still in a condensed state. The soft substance which was interposed between, in fragments, has now become more dense and more adherent to the extremities of the bone, but is yet far from uniting them in a perfect manner. The central peg continues to be prolonged towards the extremities, rapidly increases in consistence, and soon forms a very solid cylinder of bone. It is usually at this period that the apparatus is removed, but this callus is not yet to remain; consequently I have named it the "provisional callus," to point out that nature removes it to establish other means of union between the fragments.

From the third to the fifth, even to the sixth month, the tumor of the callus becomes gradually more compact, and the central portion undergoes the same transformation. The substance between the fragments acquires all the characters and consistence of compact bone, differing only in color. It is the transformation of this substance into bone that I have called the "definitive callus." In the concluding period of the formation of callus, the central portion becomes less dense; cells appear in its interior; it is converted into a reticular tissue, which itself finally disappears, and leaves the central canal of the bone perfectly free. The cells are then lined with a medullary membrane. After the establishment of the canal of the bone, it becomes continuous with the lining membrane which secretes the marrow. The external portion of the provisional callus also finishes by disappearing. It is to be understood that the different circumstances of fractures produce some slight varieties in those which attend the callus. Thus, when the fractured bones ride, the interior portion or peg is not found, and the same happens when the bone has no medullary cavity.

To recapitulate:—The re-union of bone generally offers the following phenomena: 1. Effusion of blood and viscid fluid. 2. Ecchymosis in the cellular tissue surrounding the extremities of the fracture. 3. The formation of a cartilaginous and bony ferrule externally, and of a kind of peg within. 4. Ossification of the substance interposed between the fragments. 5. Decrease of the tumor of the callus, and restoration of the medullary canal. The term of forty days, mentioned by many, is far from being sufficient; and where the fracture is oblique, or the bones ride, a much longer time is required.—*Boston Journal.*

26. *Gangrene of the mouth in Children.*—The following description of this terrible disease, which is certainly rare among us, we take from the Clinique of M. Guersent, physician to the hospital for children at Paris.

The peculiar subjects of this disease are children living in narrow and ill-ventilated situations, badly nourished, and whose constitution has been enfeebled by preceding maladies. According to some authors, its origin is very peculiar; the period of the invasion being marked by a small white spot, which soon becomes gangrenous and involves in its consequences the sphacelus of the parts adjacent. M. Guersent admits this to be often the case, but contends that it also

frequently arises from simple inflammation of the gums. It may also arise from caries of the bones of the face in scrofulous subjects;—generally in this case the gangrene commences at the border of the fistulous opening, which transmits outwardly the remains of the suppurating bone. In whatever manner it appears, the march of the malady is generally the same: the tissues suddenly assume a greyish black appearance, and diffuse a gangrenous odor wholly different from the fetor of false membranes: the affected part swells, the cheek becomes tense and smooth, and in examining the interior of the mouth we easily see that the soft parts are reduced to a state of soft putrescence and that the teeth are loosened. This state may continue a greater or less length of time; the malady may remain stationary, or may continue its ravages in the buccal cavity without appearing outwardly; but generally at the end of five or six days the tension of the cheek augments, and a deep violet spot shows itself in the centre of the tumor. The epidermis softens and is easily removed at this point, which extends gradually, and sometimes finishes by carrying away the whole side of the face. The presence of the violet color indicates that all the parts, from the mucous to the exterior, are completely sphacelous. By degrees the eschars soften, fall, and discover the bones of the jaw, affected with necrosis and deprived of their teeth. Often the children remove those themselves, without appearing to experience the slightest pain. As those who are affected with gangrene of the mouth have almost always some visceral affection the fever is very decided through the whole disease. The absorption of the fetid ichor which inundates the gums and the interior of the mouth contributes to give it an adynamic character; the children are weakened by degrees; an abundant and fetid diarrhœa supervenes, and they finally fall victims to a true poisoning when the forces of nature do not suffice to free the system by the usual emunctories from the matters absorbed. Some children preserve their appetite to the last moment, and eat with voracity all the aliments presented them. Nothing can be more hideous than these repasts, in which putrid matters and even teeth are introduced into the stomach. Those children, however, whose appetites continue, usually resist the malady the longest time.

In the post-mortem examination, the œsophagus is ordinarily found filled with a blackish and very fetid secretion, the whole thickness of the cheek converted into eschars, and the bones of the face *necrosed.* These necroses, the extent of which is infinitely variable, present a special character which seems to distinguish them from all others.

The osseous tissue, struck with death, is black and dry: it would seem, says M Guersent, as if the bone had contributed all its fluid portion to augment the putrid degeneration of the soft parts.

From the very first period the absence of false membranes will prevent our confounding gangrene of the mouth with the flaky stomatitis. As little can it be confounded with carbuncle, whose native situation and march are altogether different. Some varieties of pustula maligna approach it in some degree; but we may remark that this affection always commences with the skin, and attacks the deeper parts

only consecutively; while gangrene of the mouth commences internally with the mucous membrane, and makes its ravages in the mouth itself before extending itself to the exterior.

Treatment.—Messrs. Baro, Jonard and Guersent consider the actual cautery as the most efficacious local therapeutic to avert the progress of the disease. The application ought to be repeated according to the intensity and extent of the disease. It is not well to have recourse to caustics, such as the butter of antimony and the acids, except in cases where the disease occupies the bottom of the cavity, so that it is impossible to apply the cautery. All these caustics are attended with the inconvenience of exciting an abundant flow of saliva, by which their action is exceedingly impaired. On the contrary, cauterizing may be carried to any depth we will, by submitting the point in question to the actual cautery.

The nitrate of silver has been highly praised by some practitioners; but the eschar which it produces is too superficial; and if sufficient of the salt be employed to destroy a certain thickness of tissue, there would be danger that the patients would swallow a portion of it.

Sometimes the whole effect of these cauterizations is nothing, and the disease continues its course; but in other cases the eschars are detached, the wounds clean, and the extensibility of the substance of the cheek is such that the small deformity which results from the cicatrization is not at all comparable with what would otherwise have existed.

In the treatment of this complaint, constitutional means ought to be insisted upon. As all the stages of it indicate a profound alteration of the fluids, M. Guersent advises the employment of tonics, to be modified according to the state of the organs diseased. The gargles ought always to be of a detersive or antiseptic nature; those composed of the decoction of cinchona and of chloride of soda are preferable.—*Boston Journal.*

II. ANALYTICAL.

Art. I. *Puerperal Fever.*—In the last number of our eastern contemporary, the American Journal, there is a long practical paper, by our friend Dr. Hugh L. Hodge, on Puerperal Fever. The subject is one of such great importance, and we have within the last few days been so painfully interested in a case of this disease, that we are induced, notwithstanding the Doctor's pa-

per contains nothing particularly new, either in pathology or therapeutics, to present our readers with a liberal extract.

"The great fatality of puerperal peritonitis, whether appearing sporadically or epidemically, in private or public practice, is well known. When endemic in hospitals few patients recover—not unfrequently almost every individual perishes. This mortality no doubt partially depends on the predisposing causes, of which, as already acknowledged, we are very ignorant, but which are evidently more influential in hospitals, and other similar situations, and modify, in a most important manner, the symptoms and progress of the disease, as I shall attempt to demonstrate, rendering similar modification in the treatment essentially necessary. The very nature of puerperal fever, being an acute imflammation of a most irritable and extensive serous tissue, spreading over its whole surface with great rapidity, is alone sufficient to account for the severity of the disease, especially when it is remembered that it occurs at a moment when the female system is always preternaturally irritable.

"On ordinary occasions, the well known local and general symptoms of inflammation are manifested, so that no doubt remains, as well of the nature of the affection, as of the proper remedies, but when endemic in hospitals, its apparent character is changed—diagnosis is difficult, and the anxious physician, alive to all the responsibilities of his situation, finds the most efficient antiphlogistic remedies unavailing, and even positively injurious in a disease essentially inflammatory. The following circumstances may be mentioned as more or less peculiar in the cases under consideration.

"1. The disease was not ushered in by any decided chill, often no cold sensations were experienced; and the subsequent phenomena render it probable that inflammation generally commenced on delivery, although no symptoms were detected before the second or third day.

"2. The almost entire absence of fever, that is, of a hot, dry skin, dry tongue, and other indications of the stage of excitement; the surface being usually pallid, with a livid tinge of the lips, cheeks, tongue, nails—also moist, and natural as to temperature. There were some exceptions to this remark, but the observation is correct as regards the most acute cases of the complaint—Case V. Pitney's; Case VI. Munhollan's.

"3. The pulse was never corded nor tense. The last patient, Case VIII. Sullivan, had slight tension of the pulse, but not to such a degree as on ordinary occasions to render the lancet essential. In all cases the pulse was at first rather large, soft, and compressible, not calling for, and even forbidding depletion; it was invariably frequent, at once rising to 120, and often could not be numbered towards the termination of the disease.

"4. The respiration was much hurried; in one patient, Case II. this was remarkably the case; like that of a person agitated, or exhausted by severe exercise. Connected with this, there were gene-

rally, almost universally, a disposition to blueness of the lips, and other evidences of imperfect hematosis.

"5. Perhaps, however, the greatest peculiarity of this epidemic was the slight degree of pain experienced. Riley, Case I. suffered the most; yet on the first day she made no complaint of pain; on the second, suffered only when bowels were moved; on the third, had severe pain, but it was completely relieved by V. S. and leeches; on the fourth, it returned and extended to the joints of the extremities, and was greatly aggravated by pressure. In no other patient was pain a prominent symptom; in some it was only produced by pressure, or by motion; and in two patients, Lehy and Borstall, no pain whatever was experienced, nor any tenderness on pressure during the whole course of an acute peritonitis!!

"The tympanitic condition of the intestines was much less than usual, particularly in those cases in which there was little or no pain.

"6. The almost universal existence of a furred and yellow, ('bilious,') tongue, indicative of visceral disorder, should perhaps be mentioned as a peculiarity. It was found in all the severe cases, and in nearly all who were delivered during the prevalence of the complaint. This derangement of the digestive functions, conjoined with a very irritable condition of the tissues, seemed to constitute that state of the system or organs which predisposes to peritonitis puerperalis, and which, under other exciting causes, as wounds, fractures, &c. gives rise to erysipelas. If so, the frequent conjoint prevalence of puerperal fever and erysipelas is, in some degree, explained—their predisposing causes being the same.

"7. The secretion of bile after the first few days became excessive, and appeared to be the exciting cause of the diarrhœa and vomiting, which were injurious and exhausting. Whether this increased secretion of bile depended on the disease, or on the measures adopted, particularly the exhibition of mercury, or on both, is a question not easily answered.

"These peculiarities will explain the difficulty of diagnosis—the inefficiency of the established modes of treatment, and the consequent fatality of the disease.

"1. *Difficulty of diagnosis.*—It may be safely asserted, that without the assistance of morbid anatomy, the nature of this disease would have been altogether inscrutable. What practitioner, however experienced in clinical observations, but ignorant of what the scalpel has revealed post mortem of the consequences of this affection, would have suspected a most rapid, acute, and extensive inflammation, involving the whole surface of the irritable and sensible serous membrane of the abdomen, when his patient complained merely of weakness; had no pain, nor even tenderness on pressing and handling the abdomen; no tympanitis; no purging; no dryness nor heat of surface; no tension nor quickness of pulse? The fact that authors have alluded to such cases, would afford but little assistance to the practitioner. In the case of Lehy, for example, the symptoms of disease were imper-

fect hematosis; rapid respiration, and great frequency of pulse, with diminution of the lochiæ; want of mammary secretion and great sense of debility; symptoms sufficiently decided to indicate dangerous internal disease, but whether of serous or mucous tissues in the abdomen or the thorax, are points which could not be positively determined. The last-mentioned symptoms however, judging from what occurred at the hospital, should, under similar circumstances, be considered as proof of the existence of acute peritonitis, for death unfortunately afforded the opportunity of ocular demonstration.

"2. The inefficiency of the established modes of treatment was too certainly exhibited at this period; confirming not only the experience of my predecessors in the hospital, but that also of accoucheurs to lying-in establishments generally. It may be useful to state what I believe to be the result of our experience in the different remedies employed, and then to deduce the practice which would promise most under similar modifications of peritonitis.

"1. *Blood-letting.*—General bleeding was tolerated in some of the cases, particularly in the last one, Sullivan's, where there was some tension of the pulse. It usually moderated, for a few hours, the local symptoms; but as a general observation, it was of no permanent benefit to the local affection, and was often decidedly injurious, by exhausting more rapidly the vital powers of the patient, as indicated by the increased frequency and weakness of the pulse, pallor of the surface, and sensation of weakness.

"The same remark was often applicable to leeches, as always moderating, and in one instance, Viney's, apparently subduing the local symptoms, but diminishing the general strength, so that the local affection appeared to spread with much more rapidity. In one case, Munhollan's, no relief was afforded, and the patient complained of being more uncomfortable. On the whole, leeches proved useful, but the evacuation of blood in whatever way effected was injurious when the pulse was rendered softer and more frequent. 'As salutary as these evacuations may prove in such cases, (of sporadic peritonitis,) exactly in the same ratio do I consider them injurious in epidemic peritonitis, especially in hospitals—peritonitis from internal causes. In this latter case, so far from procuring relief, they are ordinarily followed by great frequency and smallness in the pulse, a more evident alteration of the features, and increased swelling of the abdomen.'* Exceptions occurred to this rule of Baudelocque's, but none which would not confirm the observation that sanguineous evacuations are injurious when the pulse does not sanction their employment.

"2. *Emetics* were employed occasionally to relieve the stomach of any irritating ingesta, food, bile, &c. but were not relied upon as the efficient means in the management of the disease.

"3. *Purging*, as a plan of treatment, failed entirely: in all cases, whether excited spontaneously, or by medicine, it was very distressing and exhausting to the patient, with no apparent amelioration of the

* Baudelocque, Jr. on Puerperal Peritonitis, p. 346, Amer. Ed.

symptoms. At the commencement, however, laxatives or enemas to empty the bowels were grateful and beneficial.

"4. *Diaphoretics* were of no utility—indeed the patient often perspired with even a natural temperature of the skin, and yet experienced no relief.

"5. *Mercury.*—Much was anticipated from the use of this medicine, so valuable in inflammatory affections, especially of serous tissues. Hence, next to blood-letting, our main dependence was placed on its free exhibition; it was resorted to in every case, but on review, I cannot affirm that any good was effected, and perhaps it was even positively injurious. Salivation could not be induced: even in the comparatively protracted case of Borstall, where mercury was early, freely, and perseveringly employed, no genuine ptyalism was excited. An aphthous ulceration of the tongue, lips, &c. occurred without swelling of the face, ulceration of the gums, or any inflammation of the salivary glands, and without any mercurial fœtor. The patient appeared to sink more rapidly from this extensive irritation, and from the severely painful affection of the muscles of the forearm, which may possibly have been dependent on the mercurial influence. In Manhollan's case, which was fatal, and in Sullivan's, which was one of recovery, the great distress was from purging of bilious and serous fluids, apparently from the use of calomel; indeed, in all cases, it was disposed to act on the secretions of the abdominal viscera, rather than on the mouth, and had no influence in moderating the disease. Was the increased bilious evacuations in the latter stages of the complaint owing to the inflammation, or the mercury?

"6. The *oil of turpentine* was tried, but always excited vomiting, and was therefore abandoned.

"7. *Revulsives.*—Fomentations and poultices to the abdomen, extremities, vulva, and mammæ; hot pediluvium; oil of turpentine to body and limbs; warm and mucilaginous injections into vagina and rectum; blisters to the extremities and sometimes to the abdomen, were severally employed, and generally with advantage as secondary remedies. Moist heat, however applied, was generally grateful; but of course had, in so severe a disease, no very decided influence. The blisters were often detrimental, by increasing the restlessness of the patient, and preventing sleep. Nothing seemed to be gained by attentions to the mammæ; the application of plasters and poultices or of the child, did not seem to retard the secession of the milk; as the patient was disturbed by the infant, it was soon withdrawn.

"8. *Tonics and stimuli* were usefully employed, but not with any idea of curing the disease as has been mentioned, but on another principle presently to be indicated.

"9. *Cold.*—The great disappointment experienced in not being able to resort freely in this acute form of peritonitis to general and local bleeding, and in the efficiency of other remedies, early induced me to think of ice to the abdomen as the most promising means for arresting this terrible disease. To this practice I was led by principle, and by experience in analogous affections. For several years, I have

taught at the Philadelphia Medical Institute, that the direct influence of cold is universally sedative, as respects the organic actions, to internal as well as to external capillaries, maintaining that cold applied to the skin does not determine the blood directly to the internal capillaries, but on the contrary, that the same condition of the capillary tissue is induced internally as well as externally, differing merely in degree. It may be useful to add, that the prominent facts on which this opinion of the modus operandi of cold is founded, are its acknowledged and powerful influence in moderating and arresting internal as well as external hæmorrhages; and also the decided benefit so universally experienced by its employment in many deep-seated inflammations of the limbs, of the brain, &c. when of the most acute character. Why then should it not be equally useful in acute peritonitis? I could not detect any satisfactory objection, but on theoretical views, and from experience in all analogous affections, I felt strongly inclined to use it freely and boldly. To this I was still further encouraged, not only by the failure of established modes of treatment, but by the accounts given of two cases of recovery in the Journal of the Royal Society of Medicine of Toulouse in 1827,* where ice was applied, and by the reports of several practitioners in favor of cold cataplasms, cold affusions, &c. In consultation, therefore, with my colleague, Dr. Lukens, it was agreed to employ ice in the next case that appeared suitable. That no bad consequences should result, if possible, from its employment, it was not resorted to until the symptoms were decided, until it was evident that sanguine evacuations could not be further employed, and until the lochiæ and the mammary secretion had ceased. These circumstances existing in Case VI., Munhollan's, ice in cloths and in bladders was applied to those portions of the abdomen which were tender on pressure, while dry heat, blankets, &c. were directed to the extremities, and calomel was freely exhibited with the views already explained. The result was not positively for or against its employment, but to me it was decidedly encouraging; for although the patient died as speedily as in the other cases, yet she was naturally of a delicate constitution, had been the subject of dysentery and bronchitis before and during her confinement, was delivered prematurely of twins, and was at the time the ice was applied much exhausted, (pulse being 144 and very weak,) by the disease and by the leeches, which last appeared to be injurious to the local as well as general symptoms. She had also hypertrophy of the left ventricle of the heart. The ice was agreeable to her feelings, far more so than the turpentine and other revulsives previously employed; it contributed greatly to the relief of her restlessness; moderated the local symptoms, and apparently arrested the progress of the inflammation; for, if any correct judgment could be formed from the symptoms, particularly the tenderness on pressure, before and after its application, of the extent of the inflammation, it did not extend on the peritoneum

* Vide North American Medical and Surgical Journal, vol. vi. p. 198. Archives Generales, vol. xvi. p. 136. Baudelocque on Puerperal Peritonitis, p. 400, Am. Ed.

after resort to the ice. *Dissection exhibited a more circumscribed inflammation than in either of the other fatal cases;* the effusion of lymph, &c. being confined to the lower portion of the abdomen, but in the other cases was found over all the viscera, liver and stomach not excepted.

"Was not this patient also injured by the calomel, which kept up a distressing purging, and excited no affection of the mouth and salivary glands?

"These observations certainly do not afford much encouragement in the treatment of peritonitis puerperalis as modified by epidemic causes, but by exhibiting the difficulties of the case may lead to a more scientific and efficient mode of treatment.

"Puerperal fever in the Pennsylvania Hospital was manifestly an acute inflammation of the peritoneum, conjoined with derangement of the chylopoietic viscera, and occurring in individuals whose systems were preternaturally irritable, and whose vital powers immediately yielded to the severity and extent of the local inflammation.

"The important and essential indication is to subdue the local disease, but its fulfilment was rendered fearfully difficult by the prostrated condition of the system. Hence, as frequently intimated, sanguineous depletion, purging, and other anti-phlogistic remedies were often detrimental, although temporary relief might be afforded. The general principle I would therefore deduce, is that the vital powers should not be enfeebled under the expectation of curing the local inflammation. If, therefore, the pulse becomes more irritable and frequent from the loss of blood, such evacuations should be abandoned, however apparently useful in moderating the local symptoms, and measures for supporting and invigorating the powers of life, be adopted. This I believe to be a principle of very universal application, but too often, especially at the present day, forgotten—for practitioners, from a laudable desire to overcome the local inflammation, the origo malorum, not unfrequently sacrifice the general strength of the patient.

"Anti-phlogistic remedies have seldom any other effect than simply to diminish, by a direct or indirect influence, the morbid excitement; the alteration of action, the change from a diseased to a healthy state, is effected almost exclusively by the natural powers of the economy, and demands therefore that a certain degree of power should be preserved—patients may be rendered so weak that very slight local disease may destroy them. Surgeons are familiar with these principles, and daily act upon them in the management of suppurating wounds, compound fractures, &c. of long standing, often employing stimulating measures, locally as well as generally.

"In all doubtful cases, the first evacuation of blood, if the pulse do not forbid the trial, should be tentative, as advised by Baudelocque, Jr. If the pulse acquire increased volume and tone, and become slower, the evacuations have been useful, and may sometimes be advantageously and even freely repeated. All direct depletion, however, must be effected within the first few hours; evacuations afterwards can

seldom be tolerated, but moderate nourishment, tonics, and even stimuli, are demanded, that the patient may not sink from the local affection. These invigorating measures do not apparently augment the local affection.

"Sanguineous evacuation being forbidden, or having been carried as far as practicable, the patient must be trusted to local anti-phlogistic remedies, operating as sedatives or revulsives, with appropriate attentions to the general system. Judging from the few cases above detailed, and for reasons already advanced, I would prefer the sedative influence of ice to the abdomen as more promising than any other measure hitherto recommended. It certainly deserves a more enlarged and decided trial, having been apparently successful in some few cases on record—being more grateful to the sensations of the patient, and certainly exciting a more powerful influence, whether for good or evil, than any other measure at command. In using it, moderate warmth should be preserved in every other portion of the surface, the bowels be kept at rest by anodynes, the general strength supported by simple unirritating food, tonics, or even stimuli; and any occasional or accidental symptom be appropriately attended to. Should circumstances forbid the use of ice, revulsives alone remain at our command, and should then be resorted to decidedly: a blister to cover the whole anterior and lateral portions of the abdomen can alone be adequate to the emergencies of the case; small blisters are inadequate as revulsives, and probably produce as much general distress as the large one over the abdomen. Although my confidence in mercury is destroyed as a remedy for peritonitis, it perhaps should not be entirely abandoned, as in small and repeated doses with opium, so as to prevent any cathartic effect, it may correct the derangement of the chylopoietic viscera, the integrity of whose functions is so exceedingly important in maintaining the vital powers of the system.

"Bleeding, general and local, regulated entirely by the condition of the pulse, especially as regards tension, with the constant application of ice to the abdomen, appear, therefore, to be the most promising remedies for puerperal peritonitis, under the direction of a well-instructed and attentive practitioner."

We have never yet seen puerperal fever epidemic, nor of a typhoid type. In Cincinnati, it has constantly, as far as we have seen, presented a simple inflammatory character, and required a pure anti-phlogistic treatment. Blood-letting, antimonials conjoined with calomel, calomel alone in large doses, calomel and opium, warm fomentations to the abdomen, and a large blister, have been our remedies, and invariable success has followed their application. The disease has generally been ushered in with a chill, but a case now under treatment made

its onset without the slightest rigor. Hysterical symptoms are often present, apparently from the involvement of the uterine system in the inflammation. The physician should not suffer them to mislead him in the treatment.

Art. II. *Spinal origin of Rheumatism.*—We owe an apology to our readers, for having so long neglected to notice the opinions and practice of the talented Dr. John K. Mitchell, of Philadelphia, on the subject of Rheumatism. In the 8th vol. of the American Journal, he inserted a paper, intended to prove by facts and cases, that this disease originates in irritation or inflammation of the spinal marrow, particularly about the origin of the nerves leading to the affected part. Very lately, August 1833, he has favored the profession, through the same respectable periodical, with a second paper on Rheumatism, setting forth his later observations and reflections, together with those of several of his friends. Passing by his cases, which are numerous and pertinent, we shall present our readers with such an extract from the close of his communication, as will put them in possession of his ingenious pathological and therapeutic views; and enable them, as opportunities may offer, to test the reality of his discovery by their own observations. We shall be happy to be the organ of communication between them and the profession.

"In reviewing the thirty-five cases now presented to the readers of the Journal, several general truths seem worthy of particular notice. Among these not the least important is the bearing on the question of *pathological seat.* The first case, in conjunction with the cases of rheumatism produced by carious spine, reported in my first paper on this subject, leaves no doubt in my mind that a *condition of parts* exactly the same as in rheumatism, may and does exist as an effect of irritation of the great nervous masses at the centre. It remains to be proved by the opponents of this system, by equally conclusive facts, that a genuine translateable rheumatism is ever found to be independent of such a cause, or that the disease *properly called rheumatism* is ever a primary affection of the limbs or joints. The extraordinary facility with which most of the recited cases were cured by exclusive spinal treatment, goes far to establish concurrently the same truth.

For when a true inflammation of a joint has a purely local character, as in Case XXXIII. the spinal treatment is altogether useless, while the more direct application of the same means meets with prompt success. If inflammation alone of the tissues ordinarily attacked by rheumatism constituted that disease, inflammation from a sprain or blow affecting the same parts should have the same translateable character, which is so characteristic of true rheumatic inflammation, and should also be capable of passing not only to similar parts, but to the viscera, as not unfrequently happens in rheumatic cases.

"The great value of the opiate practice in rheumatism, is no small auxiliary to the arguments in favour of the central origin, because it is only by lessening nervous irritation that such a medicine can prove useful. It follows as a corollary that the best possible practice in these cases consists in spinal depletion and counter-stimulation combined with the judicious use of opiates. That such a practice has not been more generally followed in the public duty at the hospital, arose from a desire to obtain the more conclusive evidence of the truth afforded by the avoidance of obscuring complication. That being now attained, the practitioner will no longer feel justified in leaving out of his system of cure, any one of the useful auxiliaries called for by the varying contingencies of his cases.

"Another general fact is that rheumatism attacks those parts only whose nerves come out at or near to the part of the *medulla spinalis* which is in an irritated state. This was the fact in the carious cases, and in the case of Dr. PARKER, of Elkton. Although all the nerves in descending along the spinal canal, must have been subjected to diseased influence, only those which *took their departure* from that part of the spine were influential in producing rheumatism, which consequently appeared at *their* sentient extremity exclusively. The same point is sustained strongly by the effect of the remedial measures, which were scarcely ever of any use when applied to remote parts of the spine, and were generally promptly beneficial, when directed to the origin of the nerves of the part inflamed.

"As far as we could ascertain, the remedial effect of the spinal treatment was most potent when applied exactly over the place of exit from the spine, of the nerves which supplied the inflamed part. It is also remarkable that the affection of the upper extremities was almost always the most easily remedied. This may be ascribed with probability to the greater effect of the cups on those parts of the spine which lie least imbedded in cellular tissue and muscular fibre.

"In conclusion, I may be permitted to advert to the close connexion between common rheumatism and certain diseases of mucous and fibrous tissues in the eyes, nose, mouth, alimentary canal, bladder, and urethra. In many cases diarrhœa and dysentery are found to alternate with rheumatism of the extremities, and particularly of the lower limbs. Wherever such cases happen, they are found to yield more readily to spinal treatment than to any other mode of cure, thus affording another proof of the spinal origin of such cases.

"On the whole it seems to me that the evidence for the pathology

contended for, is much more conclusive in the present instance, than that on which the profession is accustomed to rest for much of its accredited science. As far as I can comprehend the objectors, their main difficulty lies in abandoning an unquestioned opinion, founded on prescriptive learning, and the more obvious phenomena of the disease. But even they will find it impossible to explain away the facts brought forward in favor of the new doctrine, unless they can show that in original inflammations of the periphery, the most judicious treatment consists in applications to the centre, a position fully overthrown by every abortive attempt to remedy sprains or bruises of the limbs by medicaments to the spine. Another objection lies in the absence of tenderness of such parts of the spine as are here presumed to be under irritation. If, however, that irritation transmits pain to a remote part, we ought not to expect to find it tender on pressure, but we ought to look for aggravation of the peripheral disease, an event actually produced in Dr. Parker's case. In a very few persons the spine was found tender on pressure, but these were patients who belonged to a debilitated class, in whom certain parts of the spine are almost always found too susceptible, whether they have or have not rheumatism, hysteria, or any fibrous or any uterine irritation. That tenderness so much insisted on, is but proof of an irritated condition of the *spinal braces*, the effect of weakness too highly tasked, and is totally independent of disease of the *medulla spinaiis*.

"So far as this case has been discussed, the *facts* have been adduced solely on the side of the new doctrine, while its opponents have contented themselves with irrational and supposititious objections, according to a system which long since driven from other sciences, finds yet, I am sorry to say, a refuge in the temple of medical dogmatism. They admit the remarkable cures, the potent practice. They do not deny that rheumatism is produced by caries and injury of the spine, but as they do not see or feel the spinal irritation in the rest of the cases, the treatment, the relief, the victory over this obstinate malady, carry no argument to them, though sustained by analogies so striking and so profitable.

Tabular Abstract of Cases.

Name.	Date of admission.	Date of cure.	Duration of treatment.	Remarks.
W. W.	1st Sept.		1 day	
Eliz. Turner	14th Sept.		4 days	
Geo. Steiner	13th May	18th May	5 do.	
Chas. Wilson	21st Jan.	9th Feb.	19 do.	Spinal treatment failed.
W. Barnard	15th March	20th Mar.	5 do.	
Chas. Schrœder	30th March	1st April	2 do.	
W. Bowes	1st Nov.	6th Nov.	5 do.	
Anthony Della	20th Dec.	25th Dec.	5 do.	
Christ. Rudolph	23d Dec.	25th Dec.	2 do.	
Daniel Wilson	30th Dec.	2d Jan.	3 do.	
John Morgan	30th Dec.	2d Jan.	3 do.	
Charles Slater	3d Jan.	11th Jan.	8 do.	
Andrew Franklin	3d Dec.	11th Feb.	70 do.	Four relapses.
W. Carter	16th Feb.	22d Feb.	6 do.	
Joseph Pratt	4th Oct.	6th Oct.	2 do.	Several other relapses, discharged on 24th Nov. Total, 59 days.
The same	15th Oct.	17th Oct.	2 do.	
Jos. L. Baker	29th Nov.	3d Dec.	4 do.	
John Charles	1st Dec.	4th Dec.	3 do.	
John Wilson	3d Dec.	4th Dec.	1 do.	
J. M. Grezinger	24th Oct.	19th Dec.	56 do.	Salivated.
James Carpenter	7th Dec.	15th Dec.	8 do.	
Margaret Poston	24th Nov.	30th Jan.	67 do.	Blisters and splints.
W. White	23d Nov.	27th Nov.	4 do.	Total, 74 days; other treatment used.
Relapsed	1st Dec.	27th Dec.	26 do.	
Relapsed	2d Jan.	16th Feb.	34 do.	
John Cave	28th Dec.	2d Feb.	36 do.	Splints.
John Henry	2d Jan.	22d Jan.	20 do.	
W. Goldsmith	15th Jan.	19th Jan.	4 do.	
Capt. P.	10th Feb.	13th Feb.	3 do.	
G. W. Peirce	13th Feb.	15th Feb.	2 do.	
M. Donnelly	13th Feb.	27th Feb.	14 do.	Total, 22 days.
Relapsed	2d March	10th Mar.	8 do.	
P. M'Coy	2d Feb.	10th Feb.	8 do.	
J. Parsonage	3d Feb.	2d March	7 do.	
W. Woodruff	27th Jan.	26th Feb.	50 do.	
S. Summers	25th Feb.	3d March	7 do.	
R. M'Donald	16th Feb.	6th Mar.	18 do.	

"Twenty-two of these cases were cured within eight days; and of the remaining ten cases, four were instances of frequent relapses through imprudent exposure during convalescence. At least two were supposed to complain for the purpose of remaining in the hospital, an event which not unfrequently exhibits hospital practice in a disadvantageous light. Only four cases therefore required any other than spinal treatment.

"Although cupping is the most potent mode of spinal treatment, I have, in private practice, not unfrequently found that a good rubefacient, such as a sinapism, produced great relief, and sometimes effected a cure. At the very commencement of an attack, it is often adequate to the entire removal of the pain, and consequent prevention of greater severity of symptoms."

We may add, in support of the foregoing views, that we have, at this time, a convalescent patient, who, after laboring for several days under a fever of no regular type, attended with slight cough, became singularly affected in the muscles of both arms. She was at first unable to move them without pain, and the flesh was sore on pressure. At length she became affected with a dull aching, and shortly after with constant pain, not confined to any particular part. This led us to examine the spine by pressure. The upper dorsal vertebræ were extremely tender—above and below she bore pressure without flinching. The disease was, evidently, *spinitis*. She had already been bled three times. A fourth bleeding, with the subsequent application of a blister over the affected vertebræ, rendered her convalescent. The blood was highly inflammatory.

A variety of hysterical symptoms occurred throughout the whole course of this complaint, and proved refractory under the use of anti-spasmodics, but subsided with the fever and inflammation; thus justifying the spinal origin of hysteria, as pointed out by Dr. Taite. If the views of that gentleman and Dr. Mitchell, sustained by the case which we have cited, be correct, we are presented with an analogy between hysteria and rheumatism, which was not formerly suspected. In the first number of this Journal we have published a long, and as we think not uninteresting case of neuralgia, which originated as we supposed, in an inflammatory irritation at the origin of the trifacial nerves; a source of neuralgia first indicated, as far as we know, by Dr. Parry. Here then is another analogy, which, connected with the probable spinal origin of spasms and tetanus, would seem to connect the different maladies, which we have enumerated, into a natural group. The subject of the common origin of these various *muscular* affections, is one of deep interest, which we beg leave to commend to the attention of our brethren.

Art. III. *Electro-Therapeutics.*—In the Transylvania Journal for the first quarter of the present year, Dr. Luke Munsell,

Professor of Chemistry in Centre College, Kentucky, has made an effort to direct the attention of his brethren to electro-galvanism, as a means of cure in various functional diseases. His faith in its powers is lively. He has published a number of cases, of which we shall make a condensed abstract.

Case 1. A gentleman 30 years old, of sanguine temperament. Dyspeptic. A pain in the left heel and leg, persisting and severe. Re-produced by any sudden emotion, and attended with a sudden shock. A node on the shin. Disease considered as rheumatism. Calomel gave relief for the time being only. Continued for five years. Blisters and a seton did no good. The patient's own account of the effects of galvanism is the following.

"The galvanic battery was applied about three times a day, immediately after each meal. Its good effects were very soon perceived; and after using it about a month, I found myself almost entirely relieved of my dyspeptic symptoms, and the pain and tumour of the leg entirely disappeared. I occasionally had recourse to it for some time afterwards, whenever I felt slight symptoms of the disease returning. Whilst under its influence I could distinctly feel a commotion or chemical action going on in my stomach, producing a copious acid belching or eructation. I at length became *entirely and permanently restored* as to the nervous affection; although my dyspeptic symptoms still affect me *slightly* when I am imprudent in diet, or indulge too freely in eating."

Case 2. A lady aged 20, the mother of four children! Robust constitution. Was subject after her last confinement to "frequent attacks of excruciating pain in the lumbar and cardiac regions, attended with spasms, syncope, and great gastric irritation." Usual remedies of no avail. Disease increasing. During one of her most violent attacks, galvanism was resorted to.

"It was applied by causing her to grasp in each hand moistened with diluted muriatic acid, a silver spoon brought in contact with the opposite poles of the battery: silver plates were also applied to the nape of the neck, the pit of the stomach, and the broad expansion of the sacrum, and connected by wires proceeding from each pole of the battery. In less than five minutes after the application, all the cramp in the hands, pain, vomiting, and faintness, disappeared; and nothing

more was deemed necessary to be administered but a little carbonate of ammonia, which brought on a gentle diaphoresis, and after a few hours of repose, the patient was entirely relieved. A short time since, the writer had a conversation with this lady respecting her health, and was informed by her that no recurrence of her former attacks had happened since the galvanic application. She has since become the mother of three additional children, and now enjoys uninterrupted health."

Case 3. A gentleman in middle life. Typhoid form of fever, with great torpidity of the stomach and bowels, and turgescence of the salivary glands. Cathartics inoperative. The last dose had lodged *eleven days* in the system!

"In this condition the battery was applied, and the most perfect relief was obtained; the medicines, the identical pills which had been invisible for eleven days, came to light in the very shape and likeness in which they had been administered: the pain and swelling of the glands subsided, and a regular and healthy action of the stomach and bowels thereafter ensued. It occasionally happened afterwards, however, that a sudden and painful tumefaction of the glands supervened upon taking any kind of nourishment which did not agree with the stomach; in every such instance the application of the battery produced immediate relief. Occasionally, too, severe colic from flatulence occurred, and this was as promptly relieved by the galvanic application. Convalescence speedily ensued."

Case 4. A lady aged 50, of phlegmatic temperament, long subject to acidity of the stomach, which the usual antacids and carminatives failed to relieve. Subject at times to a kind of neuralgia, with swelling of one side of the face, and occasionally to an affection of one of the limbs resembling phlegmasia dolens. Worse at the menstrual periods, which were often hæmorrhagic. When laboring under one of her worst attacks, recourse was had to the galvanic battery.

"On the first trial, immediate and marked relief was obtained; the swelling and pain subsided, the hæmorrhage was arrested, and the nausea and irritation of the stomach were allayed. At every subsequent renewal of the galvanic application, the same prompt and effectual relief was obtained: and as it had now become very evident that the critical 'turn of life' was at hand, it was recommended to keep a battery always in readiness to meet each *periodical*, (or rather, as it had now become, *irregular*,) return of the catamenia. Accord-

ingly, a battery was provided and kept in readiness, and used, as occasion required, until within the last six months; when health and strength were so far restored as to render its *habitual* use no longer necessary."

Case 5. A lady of 70. Constitution good. For some years affected with vertigo and sense of fulness in the head. Relieved by venesection and cathartics. Became afflicted with a severe pain in the right temple, which returned daily about 9, A. M. and continued till sunset. In this state for three months, when the battery was opened. During a violent paroxysm—

"A silver plate was placed upon the nape of the neck, and another upon the right temple—the seat of the pain. The wires proceeding from each end of the battery had no sooner been brought in contact with the plates, than the pain *instantly* ceased, and the continuance of the application became unnecessary. After the plates were removed, it was observed that the lady was gazing with apparent astonishment at different objects about the room; and when interrogated as to the cause, she replied that *she could see as well as she ever could in her life.* Having called for a small Bible in diamond type, and looking at it without spectacles, she declared that her vision was as clear and distinct as it had ever been at any period of her life. This distinctness of vision lasted but a short time; but the pain was effectually removed, so that a repetition of the battery on that occasion, or on the following day, became unnecessary."

Case 6. A laboring man, previously well and athletic. Seized in the night with violent colic, attended with cold sweat and horrible writhings.

"After placing the silver plates upon the nape of the neck, and the pit of the stomach, the seat of the pain, they were connected by wires proceeding from each end of the battery. Instantly he was literally *straightened*, and he rose up, as well as ever he was, with the exception of soreness in the abdominal muscles. No medicine was administered, and he was able to go about his business on the following day."

Dr. Munsell informs us that these cases are selected from a great number, which go to illustrate and establish the remedial power of electro-galvanism. We hope he will continue his trials, and favor the profession with their results. We have long been convinced that the curative powers of galvanism have not

yet been developed. The difficulty of its application must necessarily retard and limit its application to the treatment of diseases; but if the cases to which it is adapted were made out, and should prove to be numerous, physicians might prepare themselves for applying it.

ART. IV. *Dysmenorrhœa.*—We are indebted to the Boston Med. and Surg. Journal of August last, for a paper on this painful and obstinate affection, by Mr. Wilson, of Glasgow, Scotland. We presume that few of our readers have not been baffled in their attempts at curing this affection, or even relieving the sufferings of their patients. For ourselves, we are compelled to say, that we have neither definite ideas of its pathology, nor a knowledge of any remedy on which reliance can be placed. In regard to the former, Mr. Wilson holds this language:

"1st. There may be such a degree of structural derangement of the uterus, as either to unfit it altogether for menstruating, or to permit the function to be performed, but not without pain and difficulty.

2dly. An inflated or irritable state of the uterus, its nerves or its blood vessels, may give rise to painful menstruation.

3dly. There may, in certain individuals, be painful menstruation, in consequence of either local or general debility. In such, the circulation is so weak that the extremities of the uterine arteries are not easily forced open, or a degree of unnatural constriction or spasm of these extremities exists, which resists, and that painfully, the ordinary or enfeebled impulse of the circulation.

Or, 4thly. There may be, as Dr. Macintosh supposes, complete closure of the os uteri preventing the escape of the menstruous fluid, or the orifice may be so very small as to render its escape difficult and painful."

Of the cases depending on the first of these conditions, our author speaks as follows:

"Painful menstruation arising from this cause, is, I presume, most frequently met with in those who are somewhat advanced in life. Childbearing subjects the uterus to many accidents and much rudeness, which lay the foundation of structural derangements at some subsequent period. In such cases, however desirable it might be to ascertain the exact state of the uterus, this will in general be beyond our reach; and even were such a diagnosis attainable, the present state of our knowledge and experience furnishes almost nothing for the removal of such uterine disease."

On the second course, he has the subjoined comment:

"The second cause mentioned of painful menstruation was an inflamed or irritable state of the uterus, its nerves or its blood vessels. Dr. Blondell says dysmenorrhœa is not an inflammatory affection. I believe it is not so in general; yet there are many cases which bear strong marks of an inflammatory character, and it would appear that the uterine or menstrual vessels are at times so excited as to furnish a product similar in many respects to the buffy coat of inflamed blood.

It has been long known that many females who menstruate with pain, have discharged a membrane from the uterus similar in shape and structure to the membrane decidua, and that while the decidua is the effect of the excitement of conception, this menstruous membrane is the effect of an inflamed or similarly excited state of the uterine vessels. Dr. Denman was led, from the frequency with which he met this membrane, to ascribe difficult menstruation to it in general. I have met with this membraneous production in several instances, but in many other cases, although it has been sought for with the greatest possible care, not a vestige of it could be found. Where such a membrane exists, it is easy to perceive how menstruation should be difficult. There is a coating formed on the inner surface of the uterus, which will present a complete barrier to the easy effusion of the menstrual fluid, so that many painful efforts may be necessary by the obstructed vessels and the uterus generally, before this membrane is expelled.

In many cases when this membrane does not exist, and when, of course, there is no such obstacle offered to the escape of the menstruous fluid, menstruation will, I conceive, be found painful, from the mere circumstance of the uterine vessels discharging their contents in their inflamed state. It is very probable, that whenever there is inflammation, the blood vessels, as well as nerves, participate in it; and as the blood vessels are endowed with sensibility, we cannot avoid the conclusion that the chief source of pain, in many cases of local inflammation, arises from the arteries being under the necessity of acting in this their unnatural and diseased state."

The treatment of the cases referrible to this head, should of course be the antiphlogistic.

"Here bleeding, both local and general—warm hip-bath, with other autiphlogistic means, will be found most useful. In such cases much benefit might be expected from an alterative course of mercury, conjoined with opium."

On the third supposed cause, general or local weakness, without inflammation, Mr. W. makes several observations, of which the following are the conclusion.

I am convinced debility will be found far more frequently the cause of dysmenorrhœa than either structural derangement or an inflammatory state of the uterus; at all events, debility and painful menstruation are very generally found together, so that even in cases where there has been good reason to suppose structural derangement or an inflamed state to have been the primary cause, debility has at length been superinduced by the severe and continued suffering from painful menstruation."

It is cases of this class that Chalybeate preparations and other metallic tonics, camphor and Dewees' tincture of Guaiacum are adopted. In regard to the last, our author's testimony accords precisely with our own experience. He has not been able to obtain by its use the beneficial effects which Dr. Dewees professes to have found from its exhibition, and pointedly condemns its employment in cases attended with inflammation. It may be remarked, however, that an inflammatory condition may be present during the menstrual period, but absent at all other times.

We have met with many cases of Dysmenorrhœa, in which during the paroxysms, the uterus seemed to labour under a real neuralgia. Would not cupping over the sacrum, or moxa to that part be attended with good effects? Might not injections into the uterus, of warm water, with or without narcotic extracts, afford relief in the paroxysm? We are not aware that these means have been fairly tried, and the last might be found inconvenient in practice.

"The fourth cause of dysmenorrhœa is partial or complete closure of the os uteri. Dr. M'Intosh of Edinburgh has lately given some important facts relative to this subject, and his opinion seems to be that the pain during menstruation is owing, in most cases, to mechanical closure of the os uteri. He has collected many specimens of uteri where the orifice barely admitted the probe, and where, as might be expected, the menstruation has always been painful. The cure of such cases is, of course, puncture and dilation by different sized bougies. It is important to know that such cases of painful menstruation occasionally exist, yet I am convinced that this forms a very fractional cause of a disease which is perhaps more common than any to which females are liable."

We cannot say that the therapeutic part of Mr. Wilson's paper amounts to much, but every attempt to settle the pathology of this obscure and interesting disorder is entitled to the attention of the profession.

III. ORIGINAL.

The Western Journal.

E Sylvis, aeque atque ad Sylvas, nuncius.

Cincinnati, October 1, 1833.

I. Our Second Hexade.

We may perhaps be pardoned for saying, that the plan of commencing a second hexade, meets the approbation of the profession in the West, as has been evinced by a very considerable number of subscribers since our last number was issued. We shall of course find in this encouragement, a new stimulus to exertion; but as it is impossible for a humble individual, immersed in the cares of professional business, to give variety and richness to a medical journal of 600 pages *per annum*, we again beg leave, respectfully to solicit our western brethren, to send us reports of their experience, that they may be made mutually to instruct each other.

II. Extra Professional Duties.

Among the obligations imposed on medical men in this new country, by their belonging to a *learned* profession, is that of encouraging education generally. This is a duty of every man of letters in society, and physicians are or ought to be of this *caste*. They should know and feel, moreover, that for the profession to attain to the dignity of sound scholarship, students of medicine should be well taught and disciplined in their preparatory education; and hence it becomes, in part, a profession-

al duty for physicians to promote, by every means in their power, the academical and collegiate education of our sons, from among whom the ranks of the profession are to be replenished. It is under this conviction, that we write this article, not merely to discharge our own duty, but to stimulate our brethren in the West to the discharge of theirs. But let us to the point.

For the advancement of the interests of education in the valley of the Mississippi, a number of teachers, two or three years since, formed an association under the name of the "WESTERN LITERARY INSTITUTE AND COLLEGE OF PROFESSIONAL TEACHERS;" and on the 9th ultimo, they held in Cincinnati, their second annual meeting. It was attended by gentlemen from Kentucky, Illinois and Ohio; among whom were a number of professors, and the presidents of four colleges or universities. A week was spent in consultation and the adoption of various resolutions, designed to promote common schools, academical and collegiate education. There were several public lectures delivered daily, on a variety of important topics, which were listened to with an auspicious attention by large and intelligent audiences. In the course of the week, measures which promise well, were devised and adopted, for effecting in this city, on the second Monday in April next, a numerous convention of literary and scientific men, from all the Mississippi states, to confer on the means of giving a simultaneous impulse to the cause of education in the great valley, which we hope, for the honor of the profession, will be approved and attended by such of its physicians, as may at the time be able to absent themselves from their business. The committee appointed to bring about this meeting, and prepare matters for its consideration, are the Rev. LYMAN BEECHER, President of the Lane Seminary, near Cincinnati; Mr. THOMAS J. MATTHEWS, President of the Woodward High School, in this city; the Rev. B. O. PEERS, President of Transylvania University; NATHAN GUILFORD, JOHN P. FOOTE, J. D. GARRARD, and JAMES HALL, Esquires, of this place, gentlemen in all respects qualified for the undertakiug confided to them.

Meanwhile, a convention of teachers and professors for the

state of Kentucky, is to be held at Lexington, in the first week of November, when the public Commencement of the collegiate department of Transylvania will be held, and the introductory lectures of the medical and law professors be delivered. It is expected that many of the past graduates of all the departments will then revisit their *alma mater*.

We congratulate society, and particularly our own profession, on these movements; believing as we do, that they are the commencement of that systematic and concentrated effort, which is essential to the proper elevation of the intellectual character of this great region; so rich in national resources and physical power, but so poor in the means of literary and scientific culti vation—we mean good teachers of all grades. When the opportunity of a better academical education especially, shall be within the reach of our youth generally, our students of medicine will feel ashamed to hand in theses remarkable for nothing but violations of spelling and grammar; and our physicians not be kept from recording and publishing their observations, because they do not know how to express themselves intelligibly.

III. Medical Journal on a New Plan.

We have received the first number of a new periodical, entitled *The Register and Library of Medical and Chirurgical Science, a medical newspaper, edited by* Granville Sharp Pattison, M. D., Professor of Anatomy in Jefferson Medical College, Philadelphia. It is a single sheet of 64 octavo pages! The reason for using such a sheet, is the saving of postage to the subscribers. One part of this newspaper is devoted to original and analectic intelligence, the other to the republication of standard works in the profession, which may be bound up in separate volumes. The present number contains 43 pages of Sir Charles Bell's Treatise on the Nervous System, a work which we need hardly say, should be in the hands of every physician. The high professional reputation of Professor Pattison, and the cheapness of his Register, should recommend it to extensive patronage.

IV. Geological Survey of the State of Tennessee.

The State of Tennessee has employed professor Troost, of the University of Nashville, to make a geological and mineralogical survey of that state; an enterprize in which he is at this time actually engaged. Every sister state in the West, should follow the example; and every physician should use his influence to promote an object of such deep interest to the profession. Diversities in soil are prolific sources of diversities in disease; and inquiries into the remote causes of cholera morbus, dysentery, autumnal fever, goitre, calculus, and many other maladies, cannot be prosecuted on scientific principles, without a general knowledge of geology and mineralogy. Every physician should have this, and, from personal observation, be able to connect with the history which he may attempt to give of the endemic diseases of the region in which he practises, a scientific account of its structure and mineralogical productions.

V. Flora of Kentucky.

Professor Short of Transylvania University, has been for some years engaged in collecting materials for a Flora of his native State. The undertaking is one of such deep interest and great labor, that every Physician of that state should contribute his aid, by collecting and transmitting specimens, together with his observations on the pharmaceutic constitution and medical properties of such of them as belong, or might be introduced into the Materia Medica. Of Professor Short's qualifications for the task he has imposed upon himself, we can speak in terms of unqualified commendation.

VI. Cabinet of Entomology for Sale.

Mr. N. M. Hentz, late Professor of Natural History in the University of North Carolina, but now resident in this city, a diligent and learned Entomologist, offers for sale his extensive

Cabinet of American Insects. It embraces 30,000 specimens, the collections of many years of laborious research, directed chiefly upon the great order Coleoptera. It is in a state of excellent preservation, and would be sold cheap, as the Professor has turned his attention to other pursuits.

VII. Mortification and Sloughing of a part of the Intestine in Hernia. Recovery without an external aperture.

We are indebted to Dr. Silas Reed, now of this city, for the following fact.

Some years since, Dr. Joseph DeWolf, of Ravenna, in this state, was called to attend on Mr. McLaughlin of that place, laboring under strangulated inguinal hernia. All the ordinary methods of reducing it, having been tried without success, Dr. DeWolf performed the operation. The bowel was found in a state of gangrene. Five inches of it were removed; and the ends brought into apposition and secured by several ligatures. It was then returned and the external wound dressed in the usual way. It healed up, and the patient recovered. We hope in our next number to be able to give a detailed account of this interesting case.

VIII. Appointments in the Medical College of Ohio.

Dr. Alban G. Smith, of Louisville, Kentucky, to the Professorship of Surgery, *vice* Doctor James M. Staughton, deceased.

Dr. Samuel D. Gross, of Easton, Penn. Demonstrator of Anatomy.